

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

In re: Petition of Orlando Utilities  
Commission for Approval of 2020  
Demand-Side Management Plan

DOCKET NO. 2020\_\_\_\_\_-EG

FILED: February 24, 2020

**ORLANDO UTILITIES COMMISSION'S PETITION FOR APPROVAL OF  
2020 DEMAND-SIDE MANAGEMENT PLAN**

The Orlando Utilities Commission (“OUC”), pursuant to Section 366.82, Florida Statutes,<sup>1</sup> Chapter 120, Florida Statutes, Rule 25-17.0021, Florida Administrative Code (“F.A.C.”), Rule 28-106.201, F.A.C., and Order No. 2019-0509-FOF-EG (the “2019 Goals Order”), hereby respectfully petitions the Florida Public Service Commission (“PSC”) for an order approving OUC’s 2020 Demand-Side Management Plan (“DSM Plan”). In summary, OUC’s 2020 DSM Plan fully complies with applicable statutes and rules and demonstrates that the DSM programs proposed by OUC in its DSM Plan will exceed the goals established by the PSC in the 2019 Goals Order.

In further support of its Petition, OUC states as follows.

**PROCEDURAL BACKGROUND**

1. The name, address, and contact information of the Petitioner are:

Orlando Utilities Commission  
Reliable Plaza at 100 West Anderson Street  
Post Office Box 3193  
Orlando, Florida 32802.

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<sup>1</sup> All references to the Florida Statutes are to the 2019 edition.

2. All pleadings, order, notices, correspondence, and other materials should be directed to OUC's representatives as follows:

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with a courtesy copy to:

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3. The agency affected by this Petition is:

Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399-0850.

4. This Petition is filed pursuant to the 2019 Goals Order, which established numeric conservation goals for OUC and the six other utilities subject to the Florida Energy Efficiency and Conservation Act, Sections 366.80-.83 and 403.519, Florida Statutes ("FEECA"). These goals are referred to as the respective utilities' "FEECA Goals." Consistent with prior PSC practice and procedure, OUC understands that its Petition will be processed in a new docket. Since OUC has been a party to the PSC's goal-setting

dockets and DSM plan approval dockets since 1993, OUC is fully aware of its filing requirements and the initiation of this docket, and thus OUC does not seek modification of any PSC action. Rather, OUC respectfully requests that the PSC approve OUC's 2020 DSM Plan as being consistent with FEECA, in the best interests of OUC's customers, and in the public interest.

### **LEGAL & FACTUAL BACKGROUND**

5. OUC is an electric utility within the meaning of Section 366.02(2), Florida Statutes, and OUC is subject to FEECA. OUC's retail electric service area covers approximately 248 square miles and includes the City of Orlando, portions of unincorporated Orange County, and portions of Osceola County. In addition, OUC and the City of St. Cloud ("St. Cloud") have an interlocal agreement under Chapter 163, Florida Statutes (the "Interlocal Agreement"), pursuant to which OUC provides all services necessary to and associated with the provision of retail electric energy to all St. Cloud electric customers, including all services provided by OUC to OUC's customers. Including the retail customers in St. Cloud, OUC currently serves approximately 242,000 electric customer accounts, including approximately 211,000 electric residential customers, 25,000 electric commercial customers, 5,700 electric industrial customers, a small number of customers to whom OUC provides street and highway lighting service, and a similarly small number of other public authorities to which OUC provides service. While St. Cloud is a legally separate municipal electric utility, consistent with OUC's obligations pursuant to the Interlocal Agreement, OUC treats the St. Cloud load and customers as part of OUC's retail obligations for planning and energy conservation purposes.

6. Pursuant to FEECA, prior PSC orders, and action by the OUC Commission, OUC has offered and continues to offer a number of programs that promote energy conservation and seasonal peak demand reductions by residential and commercial/industrial customers.

### **OUC'S 2020 DSM PLAN**

7. Through OUC's 2020 DSM Plan, OUC proposes to offer the DSM programs listed below.

8. Specifically, OUC's 2020 DSM Plan includes the following Residential programs.

- a. Home Energy Survey Program
- b. Duct Repair Rebates Program
- c. Ceiling Insulation Rebates Program
- d. High Performance Windows Rebates Program
- e. Efficient Electric Heat Pump Rebates Program
- f. New Home Rebates Program
- g. Heat Pump Water Heater Rebates Program
- h. Residential Efficiency Delivered Program

9. OUC's Commitment to Low-Income Customers. As explained in testimony in OUC's Goals Docket, Docket No. 20190019-EG, OUC's Efficiency Delivered Program is a very generous DSM program designed to promote energy conservation by low-income customers. OUC's Efficiency Delivered program provides up to \$2,000 of energy and water efficiency upgrades for the customer's home, with the amount determined according

to the customer's household income. Specifically, for a household with family income less than \$40,000 per year, OUC pays 85 percent of the cost of eligible measures, and the customer is allowed to finance the remainder on his or her utility bill over 12 months at zero interest. Beyond the Efficiency Delivered Program, OUC pursues many other activities, initiatives, and outreach programs aimed at customer education and promoting energy conservation by low-income customers,

10. OUC also proposes to offer the following specific Commercial/Industrial programs.

- a. Energy Audits Program
- b. Efficient Electric Heat Pump Rebates Program
- c. Duct Repair Rebates Program
- d. Ceiling Insulation Rebates Program
- e. Cool/Reflective Roof Rebates Program
- f. Indoor Lighting Billed Solution Program
- g. Indoor Lighting Rebates Program
- h. Custom Incentive Program

#### **STATEMENT OF SUBSTANTIAL INTERESTS AFFECTED**

11. By its Petition, OUC asks the PSC to issue an order approving OUC's 2020 DSM Plan. OUC is required by FEECA and by the PSC's 2019 Goals Order to implement a demand-side management plan in compliance with the statute and the PSC's rules, and accordingly, OUC's substantial interests in fulfilling its statutory duty and, more broadly, its substantial interests in helping its customers satisfy their energy demands most

efficiently and in promoting the public interest in using energy efficiently will be determined by the PSC in this docket.

### **DISPUTED ISSUES OF MATERIAL FACT**

12. The issues to be decided in this docket are as follows:

ISSUE 1: Does OUC's 2020 DSM Plan comply with FEECA, Rule 25-17.0021, F.A.C., and the PSC 2019 Goals Order?

ISSUE 2: Is OUC's 2020 DSM Plan in the best interests of OUC's customers and in the public interest?

ISSUE 3: Should the PSC approve OUC's 2020 DSM Plan?

At this time, OUC is not aware of any disputes regarding these issues, and OUC has filed with this Petition competent, substantial evidence – specifically, OUC's 2020 DSM Plan – that fully addresses these issues.

### **STATEMENT OF ULTIMATE FACTS ALLEGED**

13. OUC asserts that the following ultimate facts, fully supported by OUC's 2020 DSM Plan, demonstrate that OUC's 2020 DSM Plan fully complies with FEECA, Rule 25-17.0021, F.A.C., and the 2019 Goals Order.

A. The energy reductions, summer peak demand, and winter peak demand reductions resulting from the programs that comprise OUC's 2020 DSM Plan will exceed the goals established for OUC in the 2019 Goals Order.

B. Although the cost-effectiveness results indicate that the proposed DSM programs do not pass the Rate Impact Measure ("RIM") Test, the energy savings and peak demand reductions are in the best interests of OUC's customers and in the public interest. Allowing OUC to implement these programs is particularly appropriate because the PSC does not have jurisdiction over OUC's retail service rates and because the PSC has expressly recognized that OUC is in the best position to assess its customers'

needs and interests and to implement DSM programs accordingly.<sup>2</sup>

- C. OUC's proposed DSM programs, particularly the Residential Efficiency Delivered Program, provide meaningful opportunities and incentives for low-income customers to implement energy conservation measures.

#### **STATUTES AND RULES THAT ENTITLE OUC TO THE RELIEF REQUESTED**

14. OUC is entitled to the relief requested, i.e., the PSC's order approving its 2020 DSM Plan, by FEECA and by Rule 25-17.0021, F.A.C., because the proposed DSM Plan will exceed the goals established by the 2019 Goals Order and because OUC's implementation of the programs described in its 2020 DSM Plan are in the best interests of OUC's customers and in the public interest.

#### **CONCLUSION AND RELIEF REQUESTED**

15. As explained above and demonstrated by OUC's 2020 DSM Plan, filed herewith, OUC's DSM programs will exceed the energy reduction, summer peak demand, and winter peak demand reduction goals established by the 2019 Goals Order. Moreover, OUC's DSM Plan is in the best interests of OUC's customers and in the public interest. Accordingly, the PSC should approve OUC's 2020 DSM Plan.

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<sup>2</sup> In re: Petition for Approval of Numeric Conservation Goals by Orlando Utilities Commission, Order No. PSC-2004-0767-PAA-EG (August 9, 2004) at 4-5.

**WHEREFORE**, the Orlando Utilities Commission respectfully requests the PSC to enter its order approving OUC's 2020 DSM Plan.

Respectfully submitted this 24th day of February, 2020.

**/s/ Robert Scheffel Wright**

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**CERTIFICATE OF SERVICE**

I **HEREBY CERTIFY** that a true and correct copy of the foregoing has been furnished by electronic mail this 24th day of February 2020, to the following parties.

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**Robert Scheffel Wright**  
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*The Reliable One*®

**Orlando Utilities Commission  
2020 Demand-Side Management Plan**

**February 24, 2020**

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## 1.0 Introduction

### 1.1 Background

Sections 366.80 through 366.83, and 403.519, Florida Statutes (F.S.), are known collectively as the Florida Energy Efficiency and Conservation Act (FEECA). Section 366.82(2), F.S., requires the Florida Public Service Commission (PSC) to adopt appropriate goals designed to increase the conservation of expensive resources, such as petroleum fuels, to reduce and control the growth rates of electric consumption and weather-sensitive peak demand. Pursuant to Section 366.82(6), F.S., the PSC must review the conservation goals of each utility subject to FEECA at least every five years. The seven utilities subject to FEECA are Florida Power & Light Company (FPL), Progress Energy Florida, Inc. (PEF), Tampa Electric Company (TECO), Gulf Power Company (Gulf), Florida Public Utilities Company (FPUC), Orlando Utilities Commission (OUC), and JEA (referred to collectively as the FEECA utilities). Goals were last established for the FEECA utilities in December 2014 (Order No. PSC-14-0696-FOF-EU). Therefore, new goals were required to be established by January 2020.

The remainder of this report summarizes OUC's 2020 Demand-Side Management (DSM) Plan and compares OUC's projected annual peak demand and energy reductions from the programs outlined in the DSM Plan to the annual goals established by the PSC for OUC for the 2020 through 2024 period.

### 1.2 Commission Established Numeric Conservation Goals

OUC's residential and commercial/industrial numeric conservation goals for the 2020 through 2024 period were established by the PSC pursuant to Order No. PSC-2019-0509-FOF-EG (Docket No. 20190019-EG). These PSC-established annual goals, along with OUC's projected annual peak demand and energy reductions (corresponding to the programs discussed in subsequent sections of this document) are presented in Tables 1-1, 1-2 and 1-3.

Analysis of Tables 1-1 through 1-3 indicates that OUC is projected to exceed its residential numeric conservation goals for summer peak demand (kW), winter peak demand (kW), and annual energy consumption (GWh) for each year during the 2020 through 2024 period. OUC is also projected to exceed its commercial/industrial summer peak demand (kW), winter peak demand (kW), and annual energy consumption (GWh).

As shown in Tables 1-1 through 1-3, based on the programs that OUC intends to offer to its customers over the 2020 through 2024 period (and as quantified and discussed in more detail in Sections 2 and 3 of this DSM Plan), OUC projects that it will exceed its summer peak demand (kW), winter peak demand (kW), and annual energy requirements (MWh) reduction goals for each year of the 2020 through 2024 period for both the residential and commercial/industrial customer classes.

Table 1-1 – PSC-Established Goals and Projected OUC Reductions for Residential Programs (at the Generator)						
Calendar Year	Summer (MW)		Winter (MW)		Annual (GWh)	
	PSC Goal	OUC Projected	PSC Goal	OUC Projected	PSC Goal	OUC Projected
2020	0.21	0.61	0.21	0.68	0.77	1.20
2021	0.21	0.61	0.22	0.69	0.80	1.20
2022	0.19	0.61	0.20	0.69	0.72	1.20
2023	0.19	0.61	0.18	0.69	0.66	1.20
2024	0.16	0.61	0.16	0.70	0.57	1.21
Total	0.96	3.04	0.97	3.45	3.52	6.01

Table 1-2 – PSC-Established Goals and Projected OUC Reductions for Commercial/Industrial Programs (at the Generator)						
Calendar Year	Summer (MW)		Winter (MW)		Annual (GWh)	
	PSC Goal	OUC Projected	PSC Goal	OUC Projected	PSC Goal	OUC Projected
2020	0.39	1.50	0.70	1.40	0.85	7.68
2021	0.40	1.50	0.78	1.40	0.86	7.68
2022	0.37	1.47	0.78	1.37	0.85	7.50
2023	0.39	1.44	0.74	1.34	0.82	7.40
2024	0.36	1.31	0.70	1.20	0.80	6.62
Total	1.91	7.24	3.70	6.72	4.18	36.88

Table 1-3 – PSC-Established Goals and Projected OUC Reductions for Total Residential and Commercial/Industrial Programs (at the Generator)						
Calendar Year	Summer (MW)		Winter (MW)		Annual (GWh)	
	PSC Goal	OUC Projected	PSC Goal	OUC Projected	PSC Goal	OUC Projected
2020	0.60	2.11	0.91	2.08	1.62	8.88
2021	0.61	2.11	1.00	2.08	1.66	8.88
2022	0.56	2.08	0.98	2.06	1.56	8.70
2023	0.57	2.05	0.92	2.03	1.48	8.61
2024	0.52	1.92	0.86	1.90	1.37	7.83
Total	2.86	10.28	4.67	10.15	7.69	42.89

NOTE: The summed values shown may not add due to rounding.

### 1.3 Discussion of Rate Impacts from Conservation Programs

As illustrated in Appendix A of this DSM Plan, none of the DSM programs evaluated for OUC passed the Rate Impact Test, meaning that such programs will result in upward pressure on customers' rates. The extent to which rates would increase is difficult to evaluate, however. A DSM program that fails RIM but passes the Total Resources Cost Test (TRC) may lower the bills of participating customers, but would lead to an overall increase in utility rates such that those customers that don't participate in OUC DSM programs will experience an increase in their utility bills.

### 1.4 OUC's Marketing Efforts to Promote DSM Participation

OUC's conservation efforts will continue to be enhanced by an integrated approach of marketing, communications, and community outreach that will lead to higher levels of program participation and behavioral changes. Customer education will be provided through a variety of media outlets, online and in person at homes, businesses, community meetings and outreach events.

#### 1.4.1 Online Education Initiatives

OUC's Environment and Community section of the website (<http://www.ouc.com/environment-community>) provides information related to OUC's solar, green initiatives, community involvement, educational programs, educational resources along with other conservation information.

In 2019, OUC launched a blog called OUCconnect ([www.oucblog.com](http://www.oucblog.com)). On OUCconnect, customers can learn ways to save energy, water and money and how OUC is creating innovative products and services to meet the ever-growing needs of Central Florida. Customers will also read articles about our community initiatives, as well as profiles on employees making a difference both at work and in their hometowns.

#### 1.4.2 Marketing Media Overview

Every year, OUC employs the use of marketing campaigns to reach a varied demographic of electric and water customers. To ensure efficient and wide-reaching communication a mix of print advertising, online advertising, social media, broadcast television, radio, digital outdoor advertising, direct mail and other promotions are utilized to educate customers on ways to save energy, water and money. Marketing campaigns can include:

- Traditional print media, business journals and residential publications that were selected for their target audience, market share and advertising rates.
- A broad range of sites and geo-targeted messaging based on zip codes to allow OUC to customize its message to various segments of OUC's customer base.

- Television commercial spots, delivered in English and Spanish, to reinforce the idea of conservation. The TV commercials could associate conservation to lowering your utility bill or making small changes to improve energy efficiency and conserve water.
- Conservation videos that show how to conduct a home audit, money saving tips and rebate information.
- OUC radio campaigns that promote rebate programs and conservation tips.
- Direct mail that invites customers to community meetings and can be used in targeted areas to promote specific rebates.

### 1.4.3 Community Outreach Overview

Specific examples of community activities in which OUC is involved are outlined below.

**1.4.3.1 Water Color Project.** This project is designed to educate and inform participants about the importance of water conservation while providing them with a practical way to save water and an opportunity to express their artistic talent by drawing a calendar entry or painting a rain barrel. More than 2,700 students from 29 schools competed to have their artwork featured in an annual calendar, while middle and high school students decorate rain barrels that become a traveling exhibit that is displayed throughout the community.

**1.4.3.2 Project AWESOME.** OUC, in partnership with the Orlando Science Center, delivers interactive conservation and education to Orange and Osceola county public school classrooms within our service territory. OUC's A.W.E.S.O.M.E. (Alternative Water & Energy Supply; Observation, Methods & Education) Project gives fifth grade students in Orlando and St. Cloud the opportunity to test low-flow showerheads against traditional fixtures in their classrooms. The program includes classroom workshops for students, as well as hands-on labs and pre- and post-classroom activities. This curriculum has been taught in nearly 2,000 classes since 2009—reaching more than 40,000 students.

### 1.4.4 Educational Outreach

From providing better online access to their consumption history to designing convenient and effective conservation programs, OUC is arming customers with the information and tools they need to optimize the efficiency of their homes and businesses. While the tools and technologies we use might have changed, OUC's commitment to conservation has not.

**1.4.4.1 Home Energy Reports Program.** The Home Energy Reports Program, OUC's largest conservation effort to date serving 45,000 customers, encourages customers to conserve by comparing their consumption to their efficient neighbors. Participants receive regular emails or printed reports showing how they rank along with tips and suggestions on how they can improve. To administer the Home Energy Reports, OUC is working with Franklin Energy, a company that helps utilities meet their efficiency goals through effective customer engagement.



**1.4.4.2 Media Overview.** To reach the desired audience, OUC implements a comprehensive media campaign that utilized print, online, television, radio, outdoor media and community partnerships. By delivering our messages through diverse media, OUC is able to reach a broader range of customers and reinforce our commitment to showing customers how to reduce their energy and water use and ultimately their utility bills.

**1.4.4.3 Connections.** Connections is a monthly newsletter sent to all OUC customers whether they receive a paper statement or e-bill. The Connections newsletters also are posted on <http://www.OUC.com> and feature information on OUC's programs, events and energy and water saving tips.

**1.4.4.4 OUConnect Email Newsletter.** OUC sends a monthly email newsletter to all residential and commercial customers with email addresses (170,000). This newsletter keeps customers informed and connected to OUC's programs, products as well as providing conservation tips and more.

#### **1.4.4.7 Social Media.**

Staying connected to our customers at the click of a button helps get messages out fast and efficiently. We utilize our social media platforms such as Facebook and Twitter to spotlight events in the community, OUC's conservation programs and initiatives and tips on how to save energy, water and money. OUC also utilizes OUC TV via YouTube to share conservation and renewable videos.

### **1.4.5 Power Pass Program**

OUC Power Pass is a program that allows customers to pay-as-you-go or pay in advance for utility services allowing the option of avoiding deposits, late fees and a monthly bill. Statistics have shown that pay-before-consumption programs result in less electricity and water usage because customers are more aware of how much they are using. Customers can check on their electric bill or water usage every day using the OUC Power Pass portal or receive alerts via text, email and/or phone.

## **1.5 OUC Program Monitoring and Verification**

Program monitoring and evaluation are important components of DSM Plan implementation. They serve the purpose of ensuring that all DSM resources are acquired in an efficient manner. Specifically, program monitoring includes tracking program data and ensuring quality control. Program impact evaluation results document the energy and demand impacts. Process evaluation and market assessment measures the delivery efficiency of the program, and suggests ways that the program can be improved by increasing savings, reducing costs, or increasing participation.

While there is a need to regularly evaluate programs to ensure their effectiveness, there is an equal need to utilize the evaluation method that is most appropriate. Imprudent expenditures on evaluation can significantly affect the program to its detriment. The level of evaluation effort must be balanced with the need. For example, the programs that provide the largest portion of the total DSM impact should be given the greatest evaluation emphasis. Programs (or measures) that provide small per unit impacts or which have had relatively low levels of participation should be evaluated using approaches that can be justified given their relative contribution to the benefits. Therefore, while there are many methods available to evaluate the impacts of these programs, OUC will determine, on a program-by-program basis, the most efficient evaluation method based on factors such as participation levels, program performance, dollars invested, the level of uncertainty of measure performance, and other appropriate metrics.

OUC will validate energy and demand savings through the most appropriate methodology for the given program, including but not limited to: engineering calculations, pre-billing and post-billing data analysis, simulation modeling, on-site inspection/data collection, and/or metering/load research. Process evaluations will also examine how to improve the delivery of DSM programs through interviews with the design and delivery staff, customer and contractor interviews or surveys, and customer/contractor focus groups.

## **1.6 Overview of DSM Programs**

The DSM programs that OUC has included in this DSM Plan are divided into residential and commercial/industrial programs. The residential programs are offered to OUC's customers to encourage them to improve the energy efficiency of their homes, thereby decreasing heating and cooling costs. OUC offers DSM programs to its residential customers whether they live in single family or multiple family homes, and has a specific program, Efficiency Delivered, to provide assistance to encourage low income customers to improve the energy efficiency of their homes. OUC also offers programs to encourage its commercial and industrial customers to improve the energy efficiency of their buildings. OUC's residential and commercial/industrial DSM programs are summarized below, and discussed in more detail in subsequent sections of this document.

### **1.6.1 Residential Programs**

- Home Energy Survey Program – Walk-Through
- Duct Repair Rebates Program
- Ceiling Insulation Upgrade Rebates Program
- High Performance Windows Rebates Program
- Efficient Electric Heat Pump Rebates Program
- New Home Rebates Program
- Heat Pump Water Heater Rebates Program

- Efficiency Delivered Program

### **1.6.2 Commercial Programs**

- Energy Audits Program
- Efficient Electric Heat Pump Rebates Program
- Duct Repair Rebates Program
- Ceiling Insulation Rebates Program
- Cool/Reflective Roof Rebates Program
- Indoor Lighting Billed Solution Program
- Indoor Lighting Rebates Program
- Custom Incentive Program

### **1.7 Structure of the DSM Plan Document**

The following sections present descriptions of the residential (Section 2.0) and commercial/industrial (Section 3.0) DSM programs that comprise OUC's DSM Plan. The sections have been structured to be consistent with the requirements of Rule 25-17.0021(4), Florida Administrative Code (F.A.C.).

## 2.0 Residential Programs

### 2.1 Residential Program Overview

OUC offers residential DSM programs to encourage customers to improve the energy efficiency of their homes, thereby decreasing heating and cooling costs. OUC's offers DSM programs to its residential customers whether they live in single family or multiple family homes, and has a specific program to provide assistance to encourage low income customers to improve the energy efficiency of their homes.

- Home Energy Survey Program – Walk-Through
- Duct Repair Rebates Program
- Ceiling Insulation Upgrade Rebates Program
- High Performance Windows Rebates Program
- Efficient Electric Heat Pump Rebates Program
- New Home Rebates Program
- Heat Pump Water Heater Rebates Program
- Efficiency Delivered Program

### 2.2 Residential Program Descriptions

The remainder of this section presents information related to OUC's residential DSM programs in a format consistent with the requirements of Rule 25-17.0021(4), F.A.C. Please refer to Section 1.4 for a discussion of the measurement and verification process.

#### 2.2.1 Home Energy Surveys<sup>1</sup>

##### 2.2.1.1 Program Description

OUC has been offering home energy surveys dating back to the late 1970's. The home energy walk-through surveys were designed to provide residential customers with recommended energy efficiency measures and practices customers can implement and to encourage participation in various OUC rebate programs. The home energy surveys are available to both single family and multi-family residential customers.

The Residential Energy Walk-Through Survey includes a review of the customer electric consumption history as well as a walkthrough review of the attic; heating, ventilation, and air conditioning (HVAC) system; air duct and air returns; window caulking; weather stripping around doors; faucets and toilets; and lawn sprinkler systems. OUC provides participating customers

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<sup>1</sup> Discussion of OUC's Home Energy Surveys is included for informational purposes as OUC intends to continue to offer the programs. Projections of energy and demand reductions, and cost-effectiveness evaluations, have not been included for the Home Energy Surveys as they are not included in the projected demand and energy reductions that are quantified for comparison to OUC's annual goals.

specific tips on conserving electricity and water as well as details on customer rebate programs. OUC Conservation Specialists are using this walk-through type audit as a means of motivating OUC customers to participate in other conservation programs and qualify for appropriate rebates.

One of the primary benefits of the Residential Energy Survey Program is the education it provides to customers on energy conservation measures and ways their lifestyle can directly affect their energy use. Customers participating in the Energy Survey Program are informed about their historical energy usage and conservation measures that they can implement. Customers will benefit from the increased efficiency in their homes, and decreased electric and water bills.

### **2.2.1.2 Description of Program Operation and Administration**

OUC customers can participate by requesting an appointment for a Walk-Through Energy Survey by calling the OUC Customer Service Call Center. The Home Energy Survey rates how efficient a customer's home energy use is and where one can make improvements to lower utility bills. Participation is tracked through service orders that are produced when appointments are scheduled and completed.

## **2.2.2 Duct Repair Rebates**

### **2.2.2.1 Program Description**

The Duct Repair Rebates Program originated in 2000 and is designed to encourage customers to repair leaking ducts on existing systems. Qualifying customers must have an existing central air conditioning system of 5.5 tons or less and ducts must be sealed with mastic and fabric tape or any other Underwriters Laboratory (UL) approved duct tape. Participating customers receive a rebate for 100 percent of the cost of duct repairs on their homes, up to \$100.

### **2.2.2.2 Description of Program Operation and Administration**

Customers can participate by submitting a rebate application form available online at <http://www.OUC.com>. Proofs of purchase and/or receipts are required to be attached to the application and repairs can be performed by a contractor or the customer. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer's bill, or a check can be processed and sent to the property owner who may have paid for the improvement.

### **2.2.2.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the Duct Repair Rebates program are shown in Tables 2-1, 2-2 and 2-3. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Table 2-1 – Residential Duct Repair Rebates Participation					
Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	216,113	12,540	29	29	0.2%
2021	220,717	12,807	29	58	0.5%
2022	225,221	13,068	29	87	0.7%
2023	229,515	13,317	29	116	0.9%
2024	233,633	13,556	29	145	1.1%

Table 2-2 – Residential Duct Repair Rebates kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	386	0.00	0.40	11,194	0	12
2021	386	0.00	0.40	11,194	0	12
2022	386	0.00	0.40	11,194	0	12
2023	386	0.00	0.40	11,194	0	12
2024	386	0.00	0.40	11,194	0	12

Table 2-3 – Residential Duct Repair Rebates kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	401	0.00	0.42	11,631	0	12
2021	401	0.00	0.42	11,631	0	12
2022	401	0.00	0.42	11,631	0	12
2023	401	0.00	0.42	11,631	0	12
2024	401	0.00	0.42	11,631	0	12

**2.2.2.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

**2.2.3 Ceiling Insulation Rebates**

**2.2.3.1 Program Description**

The attic is the easiest place to add insulation and lower total energy costs throughout the seasons. The Ceiling Insulation Rebates program has been offered for several years and is designed to encourage customers to upgrade their attic insulation. Participating customers receive \$0.10 per square foot for upgrading their attic insulation to R-30 or greater. The program applies to conditioned areas only.

**2.2.3.2 Description of Program Operation and Administration**

Customers can participate by submitting a rebate application form available online at <http://www.OUC.com>. Proofs of purchase and/or receipts are required to be attached to the application and repairs can be performed by a contractor or the customer. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer’s bill, or a check can be processed and sent to the property owner who may have paid for the improvement.

**2.2.3.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the Ceiling Insulation Rebates program are shown in Tables 2-4, 2-5 and 2-6. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Table 2-4 – Residential Ceiling Insulation Rebates Participation					
Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	216,113	45,588	70	70	0.2%
2021	220,717	46,559	72	142	0.3%
2022	225,221	47,509	74	216	0.5%
2023	229,515	48,415	76	292	0.6%
2024	233,633	49,283	77	369	0.7%

Table 2-5 – Residential Ceiling Insulation Rebates kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	499	1.38	0.65	34,944	97	46
2021	499	1.38	0.65	35,942	99	47
2022	499	1.38	0.65	36,941	102	48
2023	499	1.38	0.65	37,939	105	50
2024	499	1.38	0.65	38,438	106	50

Table 2-6 – Residential Ceiling Insulation Rebates kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	519	1.44	0.68	36,307	101	48
2021	519	1.44	0.68	37,344	103	49
2022	519	1.44	0.68	38,381	106	50
2023	519	1.44	0.68	39,419	109	52
2024	519	1.44	0.68	39,937	111	52

#### 2.2.3.4 Cost-Effectiveness Analysis

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

#### 2.2.4 High Performance Windows Rebates

##### 2.2.4.1 Program Description

Energy-efficient windows can help minimize heating, cooling, and lighting costs. The High Performance Windows Rebates program has been offered for several years and is designed to encourage customers to install windows that improve energy efficiency in their homes. Customers



will receive a \$1.50 rebate per square foot for the purchase of ENERGY STAR® rated energy efficient windows.

**2.2.4.2 Description of Program Operation and Administration**

Customers can participate by submitting a rebate application form available online at <http://www.OUC.com>. Proofs of purchase and/or receipts are required to be attached to the application and repairs can be performed by a contractor or the customer. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer’s bill, or a check can be processed and sent to the property owner who may have paid for the improvement.

**2.2.4.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the High Performance Windows Rebates program are shown in Tables 2-7, 2-8 and 2-9. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Table 2-7 – Residential High Performance Window Rebates Participation					
Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	216,113	16,917	206	206	1.2%
2021	220,717	17,278	206	412	2.4%
2022	225,221	17,630	206	618	3.5%
2023	229,515	17,966	206	824	4.6%
2024	233,633	18,289	206	1,030	5.6%

Table 2-8 – Residential High Performance Window Rebates kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	332	0.61	0.26	68,433	126	53
2021	332	0.61	0.26	68,433	126	53
2022	332	0.61	0.26	68,433	126	53
2023	332	0.61	0.26	68,433	126	53
2024	332	0.61	0.26	68,433	126	53

Table 2-9 – Residential High Performance Window Rebates kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	345	0.63	0.27	71,102	131	55
2021	345	0.63	0.27	71,102	131	55
2022	345	0.63	0.27	71,102	131	55
2023	345	0.63	0.27	71,102	131	55
2024	345	0.63	0.27	71,102	131	55

**2.2.4.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

**2.2.5 Efficient Electric Heat Pump Rebates**

**2.2.5.1 Program Description**

The residential Efficient Electric Heat Pump Rebates program provides rebates to qualifying customers in existing homes who install heat pumps having a seasonal energy efficiency ratio (SEER) of 15.0 or higher. Customers will obtain a rebate in the form of a credit on their bill ranging up to \$1,630, depending upon the SEER rating and capacity (tons) of the new heat pump. The following table illustrates the incentives available depending on the size and efficiency of the Heat Pump installed.

	SEER	15	16	17	18	19	20	21	22	23
A / C Size (Tons)	1	\$ 5	\$ 55	\$ 95	\$ 135	\$ 170	\$ 205	\$ 230	\$ 260	\$ 280
	1 1/2	30	105	175	230	285	330	375	415	450
	2	60	160	250	325	400	460	520	570	620
	2 1/2	90	215	325	425	510	590	660	725	785
	3	115	270	400	520	625	720	805	885	955
	3 1/2	145	320	475	615	740	850	950	1,040	1,125
	4	175	375	550	710	850	975	1,090	1,195	1,290
	4 1/2	205	430	630	805	965	1,105	1,235	1,355	1,460
5	230	485	705	900	1,075	1,235	1,380	1,510	1,630	

### 2.2.5.2 Description of Program Operation and Administration

Customers can participate by submitting a rebate application form available online at <http://www.OUC.com>. Proofs of purchase or receipts are required to be attached to the application, and work must be performed by a contractor. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer’s bill or a check can be processed and sent to the property owner who may have paid for the improvement.

### 2.2.5.3 Projected Participation and Savings

The projected participation and corresponding kW and kWh reductions for the Efficient Electric Heat Pump Rebates are shown in Tables 2-10, 2-11 and 2-12. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	216,113	7,420	1,078	1,078	15%
2021	220,717	7,578	1,078	2,156	14%
2022	225,221	7,733	1,078	3,234	14%
2023	229,515	7,880	1,078	4,312	14%
2024	233,633	8,021	1,078	5,390	14%

Table 2-11 – Residential Heat Pump Rebates kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	488	0.20	0.29	525,794	220	308
2021	488	0.20	0.29	525,794	220	308
2022	488	0.20	0.29	525,794	220	308
2023	488	0.20	0.29	525,794	220	308
2024	488	0.20	0.29	525,794	220	308

Table 2-12 – Residential Heat Pump Rebates kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	507	0.21	0.30	546,299	228	320
2021	507	0.21	0.30	546,299	228	320
2022	507	0.21	0.30	546,299	228	320
2023	507	0.21	0.30	546,299	228	320
2024	507	0.21	0.30	546,299	228	320

**2.2.5.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

**2.2.6 New Home Rebates**

**2.2.6.1 Program Description**

What was previously named the Residential Gold Ring Home Program has been transformed into a more flexible “a la carte” program offering a variety of choices for the builder or home buyer and has been renamed the New Home Rebates program. This transformation was based on feedback OUC received from the residential building community in order to increase the level of participation in OUC’s program. The chart below reflects an example of the incentives available.

Rebate	Rate of Rebate	Square Footage	Total
Ceiling Insulation Upgrade to R-38 or higher	\$0.03/sq. ft.	2,000	\$60
Heat Pump	Up to \$1,630	N/A	\$500
Energy Star® Heat Pump Water Heater	\$500	N/A	\$500
Solar Water Heater	\$900	N/A	\$900

**2.2.6.2 Description of Program Operation and Administration**

The home builder supplies OUC with proof of purchase and rebate checks are processed and mailed to the home builder. Participation is tracked based on the number of rebates processed.

**2.2.6.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the Residential New Home Rebates program are shown in Tables 2-13, 2-14 and 2-15. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	216,113	3,808	116	116	3%
2021	220,717	3,889	116	232	3%
2022	225,221	3,969	116	348	3%
2023	229,515	4,044	116	466	3%
2024	233,633	4,117	116	585	3%

Table 2-14 – Residential New Home Rebates kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	1,203	1.13	0.73	139,590	131	85
2021	1,203	1.13	0.73	139,590	131	85
2022	1,203	1.13	0.73	139,590	131	85
2023	1,203	1.13	0.73	139,590	131	85
2024	1,203	1.13	0.73	139,590	131	85

Table 2-15 – Residential New Home Rebates kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	1,250	1.17	0.76	145,034	136	88
2021	1,250	1.17	0.76	145,034	136	88
2022	1,250	1.17	0.76	145,034	136	88
2023	1,250	1.17	0.76	145,034	136	88
2024	1,250	1.17	0.76	145,034	136	88

**2.2.6.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

**2.2.7 Heat Pump Water Heater Rebates**

**2.2.7.1 Program Description**

Commonly referred to as hybrid electric heat pump water heaters, such water heaters with a coefficient of performance (COP) of greater than 2.0 can cut water heating electric use and costs by more than half. OUC’s Heat Pump Water Heater Rebates program provides rebates for the heat pumps for qualifying installations. The contractor and/or retailer's invoice is required to receive this rebate and must reflect the system model number. If the receipt does not include the model

number, a copy of the retailer’s item description of product installed should be submitted that can be matched to the proof of purchase. OUC’s rebate is \$500.

**2.2.7.2 Description of Program Operation and Administration**

Customers can participate by submitting a rebate application form available online at <http://www.OUC.com>. Proofs of purchase or receipts are required to be attached to the application, and work must be performed by a contractor. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer’s bill or a check can be processed and sent to the property owner who may have paid for the improvement.

**2.2.7.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the Heat Pump Water Heater Rebates are shown in Tables 2-16, 2-17 and 2-18. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Table 2-16 – Residential Heat Pump Water Heater Rebates Participation					
Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	216,113	4,178	182	182	4%
2021	220,717	4,267	182	364	4%
2022	225,221	4,354	182	546	4%
2023	229,515	4,437	182	728	4%
2024	233,633	4,516	182	910	4%

Table 2-17 – Residential Heat Pump Water Heater Rebates kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	1,734	0.36	0.34	315,588	66	61
2021	1,734	0.36	0.34	315,588	66	61
2022	1,734	0.36	0.34	315,588	66	61
2023	1,734	0.36	0.34	315,588	66	61
2024	1,734	0.36	0.34	315,588	66	61

Table 2-18 – Residential Heat Pump Water Heater Rebates kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	1,802	0.37	0.35	327,896	68	63
2021	1,802	0.37	0.35	327,896	68	63
2022	1,802	0.37	0.35	327,896	68	63
2023	1,802	0.37	0.35	327,896	68	63
2024	1,802	0.37	0.35	327,896	68	63

**2.2.7.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

**2.2.8 Efficiency Delivered**

**2.2.8.1 Program Description**

What was once referred to as the home energy fix-up program has been revamped and expanded to allow for any OUC customer (energy, water, or both energy and water) to participate and renamed the Efficiency Delivered program. The program is available to residential customers (single family homes) and provides up to \$2,000 of energy and water efficiency upgrades based on the needs of the customer’s home. A Conservation Specialist from OUC performs a survey at



the home and determines which home improvements have the potential of saving the customer the most money. The program is an income based program which is the basis for how much OUC will help contribute toward the cost of improvements and consists of three household income tiers:

<b>Household Income</b>	<b>OUC Contribution</b>
Less than \$40,000	85% (not to exceed \$2,000)
\$40,001–\$60,000	50% (not to exceed \$1,000)
Greater than \$60,000	Rebates only

- 1) \$40,000 or less OUC will contribute 85 percent of the total cost
- 2) \$40,001 to \$60,000 OUC will contribute 50 percent of the total cost, and
- 3) greater than \$60,000 OUC will contribute the rebate incentives that apply toward the total cost.

Each customer must request and complete a free Residential Energy Survey. Ordinarily, Energy Survey recommendations require a customer to spend money replacing or adding energy conservation measures: however, customers may not have the discretionary income to implement these measures especially those in the lower income tier. Under this program, OUC will arrange for a licensed, approved contractor to perform the necessary repairs based on a negotiated and contracted rate. The remaining portion of the cost the customer is responsible for, can be paid directly to OUC or over an interest-free 12-month period on the participant’s monthly electric bill.

To be eligible for this program, the customer’s account must be in good credit standing with the exception of our low-income customers who are only required to have a current balance that is not delinquent. Some of the improvements covered under this program include ceiling insulation, duct system repair, pipe insulation, window film, window caulk, door caulk, door weather stripping, door sweep, threshold plate, air filter replacement, toilet replacement, irrigation repairs, water flow restrictors and minor plumbing repairs. Several new measures are under consideration to be added to this program.

The purpose of the program is to reduce the energy and water costs especially for low-income households, particularly those households with elderly persons, disabled persons and children. Through this program, OUC helps to lower the bills of customers who may have difficulty paying their bills, thereby decreasing the potential for costly service disconnect fees and late charges. OUC believes that this program will help customers afford other essential living expenses. For others, this program offers a one-stop-shop to facilitate the implementation of a whole suite of conservation measures at reasonable costs and pre-screened qualified contractors.

#### **2.2.8.2 Description of Program Operation and Administration**

Efficiency Delivered contractor(s) are selected through a Request for Proposal (RFP) process on a routine basis. Eligible customers are referred to the participating contractor after the

OUC Conservation Specialist inspection is complete. The Efficiency Delivered contractor then inspects the home and creates a proposal to install eligible measures. Once the customer accepts the proposal and signs the agreement the contractor calls the customer and schedules the work. Typically the work is completed within 45 days. Upon receipt of notice of completion and customer acceptance, payment to the contractor is processed and the customer’s share of the conservation improvements is billed. Participation is tracked based on completed installations.

**2.2.8.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the Efficiency Delivered program are shown in Tables 2-19, 2-20 and 2-21. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	216,113	35,615	73	73	0.2%
2021	220,717	36,374	73	146	0.4%
2022	225,221	37,116	73	219	0.6%
2023	229,515	37,824	73	292	0.8%
2024	233,633	38,503	73	365	0.9%

Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	792	0.24	0.26	57,830	18	19
2021	792	0.24	0.26	57,830	18	19
2022	792	0.24	0.26	57,830	18	19
2023	792	0.24	0.26	57,830	18	19
2024	792	0.24	0.26	57,830	18	19

Table 2-21 – Residential Efficiency Delivered kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	823	0.25	0.27	60,086	19	20
2021	823	0.25	0.27	60,086	19	20
2022	823	0.25	0.27	60,086	19	20
2023	823	0.25	0.27	60,086	19	20
2024	823	0.25	0.27	60,086	19	20

**2.2.8.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

## 3.0 Commercial/Industrial Programs

### 3.1 Commercial/Industrial Program Overview

The commercial/industrial DSM programs are offered to large scale OUC customers. These programs help reduce heating and cooling costs by improving the energy efficiency of buildings that are larger than a standard home. The commercial/industrial programs offered by OUC are:

- Energy Audits Program
- Efficient Electric Heat Pump Rebates Program
- Duct Repair Rebates Program
- Ceiling Insulation Rebates Program
- Cool/Reflective Roof Rebates Program
- Indoor Lighting Billed Solution Program
- Indoor Lighting Rebate Program
- Custom Incentive Program

### 3.2 Commercial/Industrial Program Descriptions

The remainder of this section presents information related to OUC's commercial/industrial DSM programs in a format consistent with the requirements of Rule 25-17.0021(4), F.A.C. Please refer to Section 1.4 for a discussion of the measurement and verification process.

#### 3.2.1 Energy Audits<sup>2</sup>

##### 3.2.1.1 Program Description

The commercial/industrial energy audit program has been offered for several years and is focused on increasing the energy efficiency of commercial buildings and includes a free survey comprised of a physical walk-through inspection of the commercial facility performed by highly trained and experienced energy experts. The survey will include a pre walkthrough review of historical energy usage as well as a walkthrough to examine heating and air conditioning systems including duct work, refrigeration equipment, lighting, water heating, motors, process equipment, and the thermal characteristics of the building including insulation. Following the inspection the customer receives a written report detailing cost-effective recommendations to make the facility more energy and water efficient. Participating customers are encouraged to participate in other

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<sup>2</sup> Discussion of OUC's Energy Audits is included for informational purposes as OUC intends to continue to offer the program. Projections of energy and demand reductions, and cost-effectiveness evaluations, have not been included for the Energy Audits as they are not included in the projected demand and energy reductions that are quantified for comparison to OUC's annual goals.

OUC commercial programs and directly benefit from energy conservation, which decreases their electric and water bills.

**3.2.1.2 Description of Program Operation and Administration**

OUC customers can participate by calling the OUC Customer Service Call Center and requesting an appointment for a Walk-Through Energy Survey. Participation is tracked through service orders that are produced when appointments are scheduled and completed.

**3.2.2 Efficient Electric Heat Pump Rebates**

**3.2.2.1 Program Description**

The commercial Efficient Electric Heat Pump Rebates program provides rebates to qualifying customers in existing buildings who install heat pumps having a seasonal energy efficiency ratio (SEER) of 15.0 or higher. Customers will obtain a rebate in the form of a credit on their bill ranging up to \$1,630, depending upon the SEER rating and capacity (tons) of the new heat pump. The following table illustrates the incentives available depending on the size and efficiency of the Heat Pump installed.

	SEER	15	16	17	18	19	20	21	22	23
A / C Size (Tons)	1	\$ 5	\$ 55	\$ 95	\$ 135	\$ 170	\$ 205	\$ 230	\$ 260	\$ 280
	1 1/2	30	105	175	230	285	330	375	415	450
	2	60	160	250	325	400	460	520	570	620
	2 1/2	90	215	325	425	510	590	660	725	785
	3	115	270	400	520	625	720	805	885	955
	3 1/2	145	320	475	615	740	850	950	1,040	1,125
	4	175	375	550	710	850	975	1,090	1,195	1,290
	4 1/2	205	430	630	805	965	1,105	1,235	1,355	1,460
	5	230	485	705	900	1,075	1,235	1,380	1,510	1,630

**3.2.2.2 Description of Program Operation and Administration**

Customers can participate by submitting a rebate application form available online at <http://www.OUC.com>. Proofs of purchase and/or receipts are required to be attached to the application and repairs can be performed by a contractor. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer’s bill, or a check can be processed and sent to the property owner who may have paid for the improvement.

**3.2.2.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the Efficient Electric Heat Pump Rebates program are shown in Tables 3-1, 3-2 and 3-3. The projected number of customers and program participants are forecasted from 2020 to 2024, with participation projections based on historical program participation.

Table 3-1 – Commercial Efficient Electric Heat Pump Rebates Participation					
Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	31,762	2,192	11	11	0.5%
2021	32,226	2,225	11	22	0.5%
2022	32,671	2,256	10	32	0.5%
2023	33,116	2,287	9	41	0.5%
2024	33,554	2,318	9	50	0.4%

Table 3-2 – Commercial Efficient Electric Heat Pump Rebates kW and kWh Reductions (at the Meter) <sup>1</sup>						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	712	0.27	0.42	7,835	3	5
2021	712	0.27	0.42	7,835	3	5
2022	736	0.28	0.44	7,364	3	4
2023	790	0.29	0.47	7,112	3	4
2024	790	0.29	0.47	7,112	3	4

Note 1. Annual Per Customer kWh, Winter kW, and Summer kW Reduction, and corresponding Total Annual kWh, Winter kW, and Summer kW Reduction may vary due to changes in the number of heat pump replacements within each SEER rating.

Table 3-3 – Commercial Efficient Electric Heat Pump Rebates kW and kWh Reductions (at the Generator) <sup>1</sup>						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	740	0.28	0.44	8,140	3	5
2021	740	0.28	0.44	8,140	3	5
2022	765	0.29	0.46	7,651	3	5
2023	821	0.30	0.49	7,389	3	4
2024	821	0.30	0.49	7,389	3	5

Note 1. Annual Per Customer kWh, Winter kW, and Summer kW Reduction, and corresponding Total Annual kWh, Winter kWh, and Summer kWh Reduction may vary due to changes in the number of heat pump replacements within each SEER rating.

### 3.2.2.4 Cost-Effectiveness Analysis

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

### 3.2.3 Duct Repair Rebates

#### 3.2.3.1 Program Description

The Duct Repair Rebates program started in 2009. OUC will rebate 100 percent of cost, up to \$100. Qualifying customers must have an existing central air conditioning system of 5.5 tons or less and ducts must be sealed with mastic and fabric tape or Underwriters Laboratory (UL) approved duct tape.

#### 3.2.3.2 Description of Program Operation and Administration

Customers can participate by submitting a rebate application form available online at <http://www.OUC.com>. Proofs of purchase and/or receipts are required to be attached to the application and repairs can be performed by a contractor. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer’s bill, or a check can be processed and sent to the property owner who may have paid for the improvement.

#### 3.2.3.3 Projected Participation and Savings

The projected participation and corresponding kW and kWh reductions for the Duct Repair Rebates program are shown in Tables 3-4, 3-5 and 3-6. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on OUC’s expectation of annual participation.

Table 3-4 – Commercial Duct Repair Rebates Participation					
Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	31,762	1,855	4	4	0.2%
2021	32,226	1,882	4	8	0.4%
2022	32,671	1,909	4	12	0.6%
2023	33,116	1,935	4	16	0.8%
2024	33,554	1,961	4	20	1.0%

Table 3-5 – Commercial Duct Repair Rebates kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	386	0.00	0.40	1,544	0	2
2021	386	0.00	0.40	1,544	0	2
2022	386	0.00	0.40	1,544	0	2
2023	386	0.00	0.40	1,544	0	2
2024	386	0.00	0.40	1,544	0	2

Table 3-6 – Commercial Duct Repair Rebates kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	401	0.00	0.42	1,604	0	2
2021	401	0.00	0.42	1,604	0	2
2022	401	0.00	0.42	1,604	0	2
2023	401	0.00	0.42	1,604	0	2
2024	401	0.00	0.42	1,604	0	2



**3.2.3.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

**3.2.4 Ceiling Insulation Rebates**

**3.2.4.1 Program Description**

The Ceiling Insulation Rebates program started in 2009 and was designed to increase a building’s resistance to heat loss and gain. Participating customers receive \$0.10 per square foot, for upgrading their attic insulation up to R-30 or greater.

**3.2.4.2 Description of Program Operation and Administration**

Customers can participate by submitting a rebate application form available online at <http://www.OUC.com>. Proofs of purchase and/or receipts are required to be attached to the application and repairs can be performed by a contractor. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer’s bill, or a check can be processed and sent to the property owner who may have paid for the improvement. The program applies to conditioned areas only.

**3.2.4.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the Ceiling Insulation Rebates program are shown in Tables 3-7, 3-8 and 3-9. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Table 3-7 – Commercial Ceiling Insulation Rebates Participation					
Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	31,762	1,152	5	5	0%
2021	32,226	1,169	5	10	1%
2022	32,671	1,186	5	15	1%
2023	33,116	1,202	5	20	2%
2024	33,554	1,218	5	25	2%

Table 3-8 – Commercial Ceiling Rebates Insulation kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	624	0.19	0.09	3,120	1	0
2021	624	0.19	0.09	3,120	1	0
2022	624	0.19	0.09	3,120	1	0
2023	624	0.19	0.09	3,120	1	0
2024	624	0.19	0.09	3,120	1	0

Table 3-9 – Commercial Ceiling Insulation Rebates kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	648	0.19	0.09	3,242	1	0
2021	648	0.19	0.09	3,242	1	0
2022	648	0.19	0.09	3,242	1	0
2023	648	0.19	0.09	3,242	1	0
2024	648	0.19	0.09	3,242	1	0

#### 3.2.4.4 Cost-Effectiveness Analysis

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

#### 3.2.5 Cool/Reflective Roof Rebates

##### 3.2.5.1 Program Description

The Cool/Reflective Roof Rebates program started in 2009 and was designed to reflect the sun’s rays and lower roof surface temperature while increasing the lifespan of the roof. OUC will rebate customers at \$0.12 per square foot for ENERGY STAR® cool/reflective roofing that has an initial solar reflectance greater than or equal to 0.70.

**3.2.5.2 Description of Program Operation and Administration**

Customers can participate by submitting a rebate application form available online at <http://www.OUC.com>. Proofs of purchase and/or receipts are required to be attached to the application and repairs can be performed by a contractor. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer’s bill, or a check can be processed and sent to the property owner who may have paid for the improvement. The program applies to conditioned area only.

**3.2.5.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the Cool/Reflective Roof Rebates program are shown in Tables 3-10, 3-11 and 3-12. The projected number of customers and program participants are forecasted from 2020 to 2024, with participation projections based on historical program participation.

Table 3-10 – Commercial Cool/Reflective Roof Rebates Participation					
Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	31,762	23,091	4	4	0.0%
2021	32,226	23,428	4	8	0.0%
2022	32,671	23,752	4	12	0.1%
2023	33,116	24,075	4	16	0.1%
2024	33,554	24,394	4	20	0.1%

Table 3-11 – Commercial Cool/Reflective Roof Rebates kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	132,000	0.00	25.00	528,000	0	100
2021	132,000	0.00	25.00	528,000	0	100
2022	132,000	0.00	25.00	528,000	0	100
2023	132,000	0.00	25.00	528,000	0	100
2024	132,000	0.00	25.00	528,000	0	100

Table 3-12 – Commercial Cool/Reflective Roof Rebates kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	137,148	0.00	25.98	548,592	0	104
2021	137,148	0.00	25.98	548,592	0	104
2022	137,148	0.00	25.98	548,592	0	104
2023	137,148	0.00	25.98	548,592	0	104
2024	137,148	0.00	25.98	548,592	0	104

**3.2.5.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

**3.2.6 Indoor Lighting Billed Solution**

**3.2.6.1 Program Description**

Converting old indoor lights to new lighting technologies is one of the most cost-effective improvements that a commercial customer can make. For some, the lack of capital or budget planning can be major barriers to making cost effective investments. Since 2002, OUC’s Indoor Lighting Program has assisted commercial customers with these investments through OUC’s Indoor Lighting Billed Solution. Through a competitive RFP process, OUC selected a qualified lighting contractor to work with customers to develop proposals. Customers enter into an Agreement with OUC to pay back the cost of the project based on the expected savings through monthly charges applied to their bill. Basically, it is a cash-flow neutral billed solution where the savings pay for the project’s cost over the pay-back period or term. The term cannot exceed five years.

**3.2.6.2 Description of Program Operation and Administration**

Participants are typically generated from OUC’s Large Customer Account Management staff. Once interest and potential has been identified, the contractor conducts a thorough evaluation of their existing and prospective lighting needs. Upon execution of an agreement the project proceeds through completion. After a successful inspection and acceptance of the completed project by OUC and the Customer, billing begins to recover the cost of the project over the pay-back period.

**3.2.6.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the Indoor Lighting Billed Solution program are shown in Tables 3-13, 3-14 and 3-15. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Table 3-13 – Commercial Indoor Lighting Billed Solution Participation					
Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	31,762	17,611	5	5	0.03%
2021	32,226	17,873	5	10	0.03%
2022	32,671	18,124	5	15	0.03%
2023	33,116	18,376	5	20	0.03%
2024	33,554	18,624	4	24	0.03%

Table 3-14 – Commercial Indoor Lighting Billed Solution kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	581,446	97.75	97.75	2,907,231	489	489
2021	581,446	97.75	97.75	2,907,231	489	489
2022	581,446	97.75	97.75	2,907,231	489	489
2023	581,446	97.75	97.75	2,907,231	489	489
2024	581,446	97.75	97.75	2,325,785	391	391

Table 3-15 – Commercial Indoor Lighting Billed Solution kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	604,123	101.56	101.56	3,200,613	508	508
2021	604,123	101.56	101.56	3,200,613	508	508
2022	604,123	101.56	101.56	3,200,613	508	508
2023	604,123	101.56	101.56	3,200,613	508	508
2024	604,123	101.56	101.56	2,416,490	406	406

**3.2.6.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

**3.2.7 Indoor Lighting Rebates**

**3.2.7.1 Program Description**

Commercial customers that upgrade the efficiency of their indoor lighting may be eligible to receive a rebate of \$250/kW through the Indoor Lighting Rebates program. Participation is open to facilities located within OUC’s service area that receive electric service under an OUC commercial rate. Participants or customers may be any of the following:

- Individual customers who install more efficient lighting in their own facilities.
- National or local companies that install more efficient lighting.
- Local contractors, design/build firms, architectural and engineering firms, and commercial property developers working on behalf of OUC commercial customers.

**3.2.7.2 Description of Program Operation and Administration**

Customers can participate by submitting a rebate application form available online at <http://www.OUC.com>. Proofs of purchase and/or receipts are required to be attached to the application and repairs can be performed by a contractor. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer’s bill, or a check can be processed and sent to the property owner who may have paid for the improvement. Applies to indoor lighting only.

**3.2.7.3 Projected Participation and Savings**

The projected participation and corresponding kW and kWh reductions for the Indoor Lighting Rebates program are shown in Tables 3-16, 3-17 and 3-18. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Table 3-16 – Commercial Indoor Lighting Rebates Participation					
Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	31,762	21,264	16	16	0.1%
2021	32,226	21,574	16	32	0.1%
2022	32,671	21,872	15	47	0.2%
2023	33,116	22,170	15	62	0.3%
2024	33,554	22,463	14	76	0.3%

Table 3-17 – Commercial Indoor Lighting Rebates kW and kWh Reductions (at the Meter)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	167,171	28.21	28.21	2,674,740	451	451
2021	167,171	28.21	28.21	2,674,740	451	451
2022	167,171	28.21	28.21	2,507,569	423	423
2023	167,171	28.21	28.21	2,507,569	423	423
2024	167,171	28.21	28.21	2,340,398	395	395

Table 3-18 – Commercial Indoor Lighting Rebates kW and kWh Reductions (at the Generator)						
Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	173,691	29.31	29.31	2,779,055	469	469
2021	173,691	29.31	29.31	2,779,055	469	469
2022	173,691	29.31	29.31	2,605,364	440	440
2023	173,691	29.31	29.31	2,605,364	440	440
2024	173,691	29.31	29.31	2,431,673	410	410

**3.2.7.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

**3.2.8 Custom Incentive**

**3.2.8.1 Program Description**

Through the Custom Incentive program, commercial customers receive incentives based on the reduction in peak demand their projects achieve plus the first year energy savings. Energy and demand saving incentives are paid for the maximum one-hour average demand reduction that occurs during Summer Demand period defined as weekdays, between 1 p.m.– 6 p.m., from April through October. Pre- and post- inspections are required. Incentives and other program considerations are summarized below.

- \$550 per kW reduction incentive and/or energy reduction measures at \$0.032 per kWh will also be incentivized.
- \$250 per kW reduction incentive for all lighting measures.
- Incentives shall not exceed 50% of project cost.
- Incentives may be paid at 50% on project completion and remainder at one year depending on performance results.
- All incentives will be paid as a credit appearing on the customer’s OUC statement.
- Simple return on investment must be greater than 2 years.
- Energy and demand conservation measure should have a useful life of at least 10 years.
- A maximum incentive of \$100,000 per customer annually.



### 3.2.8.2 Description of Program Operation and Administration

The following requirements must be met prior to work beginning:

1. Customer prepares and submits a Project Application. Customer downloads the application at: [WWW.OUC.COM/SAVEYOURWAY](http://WWW.OUC.COM/SAVEYOURWAY)
2. Customer schedules on-site inspection(s) and meeting(s) with OUC to review proposed project.
3. Customer works with OUC through the incentive funding commitment and approval process.
4. OUC provides customer project approval and incentive funding commitment.
5. Customer performs any required pre-installation Measurement and Verification (M&V).

After work is complete, the following must occur:

1. Customer submits Installation Report
2. Customer performs post-installation M&V
3. Customer documents the kW and kWh savings.
4. Customer schedules on-site inspection(s) by OUC to confirm installation and M&V results.
5. Customer obtains final approval from OUC and receives rebate in the form of a billing credit on OUC monthly statement

OUC has designed the Custom Incentive Program to encourage electric demand reductions that go above and beyond the efficiency gains typically achieved in retrofit or replacement projects. Consequently, demand savings credit is based only on reductions that exceed current state and federal minimum efficiency standards, wherever such standards apply (example: Florida's Energy Efficient Building Code Standards). In cases where these standards do not exist, savings credit is based on improvements relative to a customer's electric demand prior to participating in the program.

### 3.2.8.3 Projected Participation and Savings

The projected participation and corresponding kW and kWh reductions for the Custom Incentive program are shown in Tables 3-19, 3-20 and 3-21. The projected number of customers and program participants are forecasted from 2020 through 2024, with participation projections based on historical program participation.

Calendar Year	Total Number of Customers	Total Number of Eligible Customers	Projected Annual Average Number of Program Participants	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level %
2020	31,762	31,255	13	13	0.0%
2021	32,226	31,712	13	26	0.1%
2022	32,671	32,150	13	39	0.1%
2023	33,116	32,587	12	51	0.2%
2024	33,554	33,019	12	63	0.2%

Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	97,431	30.81	30.81	1,266,597	400	400
2021	97,431	30.81	30.81	1,266,597	400	400
2022	97,431	30.81	30.81	1,266,597	400	400
2023	97,431	30.81	30.81	1,169,167	370	370
2024	97,431	30.81	30.81	1,169,167	370	370

Calendar Year	Per Customer kWh Reduction	Per Customer Winter kW Reduction	Per Customer Summer kW Reduction	Total Annual kWh Reduction	Total Annual Winter kW Reduction	Total Annual Summer kW Reduction
2020	101,230	32.01	32.01	1,315,994	416	416
2021	101,230	32.01	32.01	1,315,994	416	416
2022	101,230	32.01	32.01	1,315,994	416	416
2023	101,230	32.01	32.01	1,214,764	384	384
2024	101,230	32.01	32.01	1,214,764	384	384

#### **3.2.8.4 Cost-Effectiveness Analysis**

OUC has used the Commission-approved cost-effectiveness methodologies required by Rule 25-17.008, F.A.C. to evaluate the cost-effectiveness of this program. The results of the cost-effectiveness tests are summarized in Appendix A.

## Appendix A

This appendix presents the results of the cost-effectiveness test performed on the Demand-Side Management (DSM) programs described in OUC's 2020 DSM Plan. The cost-effectiveness tests were performed using the Florida Integrated Resource Evaluator (FIRE) model, which has been previously relied upon by the Florida Public Service Commission (PSC) in evaluating DSM measures. The FIRE model was selected for use in evaluating the cost-effectiveness of OUC's DSM programs as it provides the cost-effectiveness tests required pursuant to Rule 27-17.008, Florida Administrative Code (F.A.C). The FIRE model output is in a format that is consistent with the requirements of the *Florida Public Service Commission Cost Effectiveness Manual For Demand Side Management Programs and Self-Service Wheeling Proposals*, which is incorporated by reference into Rule 27-17.008.

The remainder of this appendix presents a description of the FIRE model, a qualitative, general discussion of the cost-effectiveness evaluations, a summary of the cost-effectiveness results, and the FIRE model output reports for each of OUC's DSM programs included in OUC's DSM Plan.

### A.1 Overview of the FIRE Model

The FIRE model is a computer-based program originally developed by Florida Power Corporation (now Progress Energy Florida, or PEF) in 1992 in order to evaluate the cost-effectiveness of DSM. The output format of the model was originally developed to be consistent with the specifications of the Florida Public Service Commission and amended Rule 25-17.008 F.A.C. issued on July 2, 1991. The FIRE model has been used to evaluate the cost-effectiveness of DSM in numerous Need for Power Applications approved by the PSC, including OUC's Stanton Energy Center Unit A (Final Order PSC-01-1103-FOF-EM) and Stanton Energy Center Unit B (Final Order PSC-06-0457-FOF-EM), and has also been used by OUC and approved by the PSC in previous FEECA filings, including most recently OUC's 2010 and 2015 DSM Plans .

The FIRE model presents cost-effectiveness evaluations of three different tests - the Total Resources Cost (TRC) test, the Participant Test, and the Rate Impact (RIM) Test. The cost-effectiveness of each measure is developed with respect to a so-called "avoided unit."<sup>3</sup> The utility avoids construction of this unit through the implementation of a DSM program to slow the growth of energy demand. The cost of each DSM program is compared with the equivalent costs associated with the construction and operation of the avoided unit. Depending on the demand-side

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<sup>3</sup> For purposes of OUC's 2020 DSM Plan, there is no avoided unit as OUC is not projected to require additional capacity to maintain reserve margins within the study period considered in this filing.

program under analysis, this avoided unit may be avoided completely, may be deferred to a date further in the future, or may be supplanted by a different unit type due to changes in the utility's need profile.

The FIRE model requires two different types of input files: an input file containing data specific to the avoided unit and an input file containing data specific to the DSM program to be evaluated. The FIRE model provides various output sheets, including the three cost-effectiveness tests (RIM, Participant, and TRC tests).

### **A.1.1 FIRE Model Cost-Effectiveness Tests**

The three FIRE model cost effectiveness tests are explained as follows:

- RIM Test - The Rate Impact Test is used to best approximate the effect that the implementation of a particular measure would have upon a utility's rate payers. Costs and benefits related to the cash flow of a utility are incorporated into this test.
- Participant Test - The Participant Test measures the effect of the DSM measure on the participating customers. Only costs and benefits directly related to these customers are included in the analysis. Rebates or incentives available for participation in the demand-side program are included while their associated costs to the utility are ignored.
- TRC Test - The purpose of the TRC test is to measure the overall benefit-to-cost ratio of the demand-side program. This test incorporates the cost to both the utility and the participant. Additional externalities are also included if they can be quantified. These values include anything not otherwise included in the cost or benefit values, such as the environmental effects. Only external costs and benefits are included in this analysis. Costs to the utility and to the participating customer are included, while any transfer payments between the utility and its customers are not. These internal transfers are a cost to one party and a direct benefit to another and cancel out in the overall analysis.

## **A.2 General Discussion of the Cost-Effectiveness Results**

As discussed previously, the FIRE model was used to evaluate the cost-effectiveness of the DSM programs included in OUC's 2020 DSM Plan. The FIRE model was selected as it is a model which has been used in numerous PSC proceedings and also because it provides output in a format consistent with PSC requirements for reporting the cost-effectiveness of DSM. Although the PSC established numeric conservation goals for the 2020 through 2024 period in Order No. PSC-2019-0509-FOF-EU (Docket No. 20190019-EG), the FIRE model evaluation was performed for a 10-year period (2020 through 2029), consistent with the duration of the evaluation periods in OUC's previous (i.e., 2010 and 2015) DSM Plans.

An important factor to consider when viewing the results of the cost-effectiveness analyses presented herein is that the program-specific assumptions were intended to be representative of OUC's average customer base. That is, energy savings corresponding to a given program were based on what may be achieved for a typical customer. For example, when evaluating the cost-effectiveness of OUC's residential ceiling insulation rebate program, reductions in energy loss achieved through increased insulation were based on average energy usage per residential. These energy reductions influence the cost-effectiveness results. However, it may not be correct to assume that the types of customers that participate in a given program are representative of an average customer profile. Stated otherwise, those customers that may choose to participate in a given DSM program will do so based on consideration of their own personal energy usage, their discretionary income, and other, non-quantifiable factors (such as the non-monetary value they place on energy efficiency).

When reviewing the results of the cost-effectiveness evaluations, all of the aforementioned factors should be considered. Taking such factors into consideration, the results of the cost-effectiveness evaluations should be viewed as useful for informational purposes, but not a definitive determinant of the overall benefits associated with OUC's DSM programs.

### **A.3 Summary of Cost-Effectiveness Results**

Table A-1 summarizes the results of the cost-effectiveness evaluations of OUC's residential DSM programs. Table A-2 summarizes the results of the cost-effectiveness evaluations of OUC's commercial/industrial DSM programs. The cost-effectiveness results presented in Tables A-1 and A-2 reflect the projected program participation and demand and energy reductions for the 2020 through 2024 period presented previously in OUC's 2020 DSM Plan.

Table A-1			
Summary of Cost-Effectiveness Evaluations for OUC's Residential Programs			
Program	RIM	PT	TRC
Duct Repair Rebates	0.20	2.14	0.32
Ceiling Insulation Upgrade Rebates	0.18	0.46	0.10
High Performance Windows Rebates	0.13	0.62	0.09
Efficient Electric Heat Pump Rebates - SEER 15	0.18	0.47	0.10
Efficient Electric Heat Pump Rebates - SEER 16	0.16	0.34	0.07
Efficient Electric Heat Pump Rebates - SEER 17	0.16	0.30	0.06
Efficient Electric Heat Pump Rebates - SEER 18	0.16	0.29	0.06
Efficient Electric Heat Pump Rebates - SEER 19	0.15	0.29	0.05
Efficient Electric Heat Pump Rebates - SEER 20	0.15	0.29	0.05
Efficient Electric Heat Pump Rebates - SEER 21	0.15	0.28	0.05
Efficient Electric Heat Pump Rebates - SEER 22+	0.15	0.29	0.05
New Home Rebates	0.19	0.33	0.08
Heat Pump Water Heater Rebates	0.20	0.62	0.14
Residential Efficiency Delivered	0.14	1.29	0.17

Table A-2			
Summary of Cost-Effectiveness Evaluations for OUC's Commercial/Industrial Programs			
Program	RIM	PT	TRC
Efficient Electric Heat Pump Rebates - SEER 15	0.26	0.48	0.12
Efficient Electric Heat Pump Rebates - SEER 16	0.23	0.35	0.08
Efficient Electric Heat Pump Rebates - SEER 17	0.24	0.31	0.07
Efficient Electric Heat Pump Rebates - SEER 18	0.23	0.30	0.07
Efficient Electric Heat Pump Rebates - SEER 19	0.23	0.29	0.07
Efficient Electric Heat Pump Rebates - SEER 20	0.23	0.29	0.07
Efficient Electric Heat Pump Rebates - SEER 21	0.23	0.29	0.07
Efficient Electric Heat Pump Rebates - SEER 22+	0.23	0.29	0.07
Duct Repair Rebates	0.29	1.10	0.32
Ceiling Insulation Upgrade Rebates	0.25	0.48	0.12
Cool/Reflective Roof Rebates	0.52	0.69	0.37
Indoor Lighting Billed Solution	0.43	1.86	0.77
Indoor Lighting Rebates	0.51	1.55	0.76
Custom Incentive	0.39	3.67	1.28

## A.4 FIRE Model Output Reports

The following tables present the results of the cost-effectiveness evaluations for OUC's DSM programs in a format that is consistent with the requirements of the *Florida Public Service Commission Cost Effectiveness Manual For Demand Side Management Programs and Self-Service Wheeling Proposals*, which is incorporated by reference into Rule 27-17.008. F.A.C.



PROGRAM: Residential Duct Repair Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.40	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.42	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	401.7	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	386.0	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	129.53	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	133.7	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.50	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	100	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03

PROGRAM: Residential Duct Repair Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	29	29	3.00	3.94	3.00	3.00	1	1
2021	58	58	3.26	3.92	3.26	3.26	1	1
2022	87	87	3.41	4.41	3.41	3.41	1	1
2023	116	116	3.53	4.70	3.53	3.53	1	1
2024	145	145	3.60	3.98	3.60	3.60	1	1
2025	174	174	3.70	5.26	3.70	3.70	1	1
2026	203	203	3.77	5.49	3.77	3.77	1	1
2027	232	232	3.90	5.67	3.90	3.90	1	1
2028	261	261	4.00	5.83	4.00	4.00	1	1
2029	290	290	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Duct Repair Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Duct Repair Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.229471
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.684045
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.283641
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.914104
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.086207
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.369848
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4.156690
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4.955180
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	5.773297
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	5.568345
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	30.020829
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	20.354370

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential Duct Repair Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	5.8241	0.2295	0.0000	0.0000	0.2295	0.2295
2021	17.4724	0.6840	0.0000	0.0000	0.6840	0.6840
2022	29.1207	1.2836	0.0000	0.0000	1.2836	1.2836
2023	40.7690	1.9141	0.0000	0.0000	1.9141	1.9141
2024	52.4173	2.0862	0.0000	0.0000	2.0862	2.0862
2025	64.0656	3.3698	0.0000	0.0000	3.3698	3.3698
2026	75.7138	4.1567	0.0000	0.0000	4.1567	4.1567
2027	87.3621	4.9552	0.0000	0.0000	4.9552	4.9552
2028	99.0104	5.7733	0.0000	0.0000	5.7733	5.7733
2029	110.6587	5.5683	0.0000	0.0000	5.5683	5.5683
NOMINAL	582.4142	30.0208	0.0000	0.0000	30.0208	30.0208
NPV		20.3544	0.0000	0.0000	20.3544	20.3544

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Residential Duct Repair Rebates

(1)	(2)----- UTILITY PROGRAM COSTS & REBATES ----->						<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->											(18)
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	3.7565	0.0000	3.7565	2.9000	0.0000	2.9000	3.8767	0.0000	3.8767	5.5970	0.1682	0.4197	0.5878	0.0000	0.0000	0.0000	0.0000	
2021	3.8316	0.0000	3.8316	2.9000	0.0000	2.9000	3.9542	0.0000	3.9542	16.7910	0.5477	1.2842	1.8318	0.0000	0.0000	0.0000	0.0000	
2022	3.9082	0.0000	3.9082	2.9000	0.0000	2.9000	4.0333	0.0000	4.0333	27.9850	0.9540	2.1831	3.1371	0.0000	0.0000	0.0000	0.0000	
2023	3.9864	0.0000	3.9864	2.9000	0.0000	2.9000	4.1140	0.0000	4.1140	39.1790	1.3811	3.1174	4.4985	0.0000	0.0000	0.0000	0.0000	
2024	4.0661	0.0000	4.0661	2.9000	0.0000	2.9000	4.1963	0.0000	4.1963	50.3730	1.8115	4.0883	5.8998	0.0000	0.0000	0.0000	0.0000	
2025	4.1474	0.0000	4.1474	2.9000	0.0000	2.9000	4.2802	0.0000	4.2802	61.5670	2.2799	5.0968	7.3766	0.0000	0.0000	0.0000	0.0000	
2026	4.2304	0.0000	4.2304	2.9000	0.0000	2.9000	4.3658	0.0000	4.3658	72.7610	2.7412	6.1439	8.8851	0.0000	0.0000	0.0000	0.0000	
2027	4.3150	0.0000	4.3150	2.9000	0.0000	2.9000	4.4531	0.0000	4.4531	83.9550	3.2782	7.2309	10.5091	0.0000	0.0000	0.0000	0.0000	
2028	4.4013	0.0000	4.4013	2.9000	0.0000	2.9000	4.5422	0.0000	4.5422	95.1490	3.8046	8.3589	12.1635	0.0000	0.0000	0.0000	0.0000	
2029	4.4893	0.0000	4.4893	2.9000	0.0000	2.9000	4.6330	0.0000	4.6330	106.3430	4.1582	9.5292	13.6874	0.0000	0.0000	0.0000	0.0000	
NOMINAL	41.1321	0.0000	41.1321	29.0000	0.0000	29.0000	42.4489	0.0000	42.4489	559.7000	21.1244	47.4524	68.5768	0.0000	0.0000	0.0000	0.0000	
NPV	31.1702	0.0000	31.1702	22.2027	0.0000	22.2027	32.1680	0.0000	32.1680		14.3851	32.3499	46.7350		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Duct Repair Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	3.756	3.877	0.000	7.633	0.000	0.000	0.229	0.000	0.229	(7.404)	(7.404)
2021	0.000	3.832	3.954	0.000	7.786	0.000	0.000	0.684	0.000	0.684	(7.102)	(14.072)
2022	0.000	3.908	4.033	0.000	7.942	0.000	0.000	1.284	0.000	1.284	(6.658)	(19.942)
2023	0.000	3.986	4.114	0.000	8.100	0.000	0.000	1.914	0.000	1.914	(6.186)	(25.063)
2024	0.000	4.066	4.196	0.000	8.262	0.000	0.000	2.086	0.000	2.086	(6.176)	(29.864)
2025	0.000	4.147	4.280	0.000	8.428	0.000	0.000	3.370	0.000	3.370	(5.058)	(33.556)
2026	0.000	4.230	4.366	0.000	8.596	0.000	0.000	4.157	0.000	4.157	(4.439)	(36.598)
2027	0.000	4.315	4.453	0.000	8.768	0.000	0.000	4.955	0.000	4.955	(3.813)	(39.052)
2028	0.000	4.401	4.542	0.000	8.943	0.000	0.000	5.773	0.000	5.773	(3.170)	(40.967)
2029	0.000	4.489	4.633	0.000	9.122	0.000	0.000	5.568	0.000	5.568	(3.554)	(42.984)
NOMINAL	0.000	41.132	42.449	0.000	83.581	0.000	0.000	30.021	0.000	30.021	(53.560)	
NPV	0.000	31.170	32.168	0.000	63.338	0.000	0.000	20.354	0.000	20.354	(42.984)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.32							





PROGRAM: Residential Ceiling Insulation Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.65	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.68	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	519.5	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	499.2	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	167.5	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	915.0	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.50	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	200	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT	0.0	
FACTOR FOR CUSTOMER BILL .....	1.0	

\* FIRE Program Version Number: 1.03

PROGRAM: Residential Ceiling Insulation Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	70	70	3.00	3.94	3.00	3.00	1	1
2021	142	142	3.26	3.92	3.26	3.26	1	1
2022	216	216	3.41	4.41	3.41	3.41	1	1
2023	292	292	3.53	4.70	3.53	3.53	1	1
2024	369	369	3.60	3.98	3.60	3.60	1	1
2025	448	448	3.70	5.26	3.70	3.70	1	1
2026	529	529	3.77	5.49	3.77	3.77	1	1
2027	612	612	3.90	5.67	3.90	3.90	1	1
2028	697	697	4.00	5.83	4.00	4.00	1	1
2029	784	784	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Ceiling Insulation Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1)	(1A)*	(2)	(2A)*	(3)	(4)	(5)	(6)	(6A)	(7)
Year	VALUE OF DEFERRAL FACTOR	AVOIDED GEN UNIT CAPACITY COST \$(000)	AVOIDED ANNUAL UNIT KWH GEN (000)	AVOIDED UNIT FIXED O&M COST \$(000)	AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	AVOIDED GEN UNIT FUEL COST \$(000)	REPLACEMENT FUEL COST \$(000)	AVOIDED PURCHASED CAPACITY COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Ceiling Insulation Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.716329
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.155688
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4.098669
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	6.194661
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	6.832863
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	11.161589
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	13.931091
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	16.808930
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	19.824439
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	19.355924
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	101.080182
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	68.264587

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

## \* WORKSHEET : DSM PROGRAM FUEL SAVINGS

PROGRAM: Residential Ceiling Insulation Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	18.1809	0.7163	0.0000	0.0000	0.7163	0.7163
2021	55.0623	2.1557	0.0000	0.0000	2.1557	2.1557
2022	92.9825	4.0987	0.0000	0.0000	4.0987	4.0987
2023	131.9417	6.1947	0.0000	0.0000	6.1947	6.1947
2024	171.6800	6.8329	0.0000	0.0000	6.8329	6.8329
2025	212.1975	11.1616	0.0000	0.0000	11.1616	11.1616
2026	253.7539	13.9311	0.0000	0.0000	13.9311	13.9311
2027	296.3493	16.8089	0.0000	0.0000	16.8089	16.8089
2028	339.9835	19.8244	0.0000	0.0000	19.8244	19.8244
2029	384.6567	19.3559	0.0000	0.0000	19.3559	19.3559
NOMINAL	1,956.7882	101.0802	0.0000	0.0000	101.0802	101.0802
NPV		68.2646	0.0000	0.0000	68.2646	68.2646

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Residential Ceiling Insulation Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES ----->							<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM NONREC. COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	11.7263	0.0000	11.7263	14.0000	0.0000	14.0000	64.0506	0.0000	64.0506	17.4719	0.5249	1.3100	1.8350	0.0000	0.0000	0.0000	0.0000
2021	12.3026	0.0000	12.3026	14.4000	0.0000	14.4000	67.1983	0.0000	67.1983	52.9148	1.7259	4.0469	5.7728	0.0000	0.0000	0.0000	0.0000
2022	12.8972	0.0000	12.8972	14.8000	0.0000	14.8000	70.4462	0.0000	70.4462	89.3562	3.0461	6.9706	10.0167	0.0000	0.0000	0.0000	0.0000
2023	13.5107	0.0000	13.5107	15.2000	0.0000	15.2000	73.7971	0.0000	73.7971	126.7959	4.4696	10.0891	14.5586	0.0000	0.0000	0.0000	0.0000
2024	13.9623	0.0000	13.9623	15.4000	0.0000	15.4000	76.2635	0.0000	76.2635	164.9845	5.9330	13.3903	19.3233	0.0000	0.0000	0.0000	0.0000
2025	14.6114	0.0000	14.6114	15.8000	0.0000	15.8000	79.8093	0.0000	79.8093	203.9218	7.5514	16.8815	24.4328	0.0000	0.0000	0.0000	0.0000
2026	15.2810	0.0000	15.2810	16.2000	0.0000	16.2000	83.4664	0.0000	83.4664	243.8575	9.1870	20.5912	29.7783	0.0000	0.0000	0.0000	0.0000
2027	15.9714	0.0000	15.9714	16.6000	0.0000	16.6000	87.2378	0.0000	87.2378	284.7916	11.1203	24.5287	35.6490	0.0000	0.0000	0.0000	0.0000
2028	16.6834	0.0000	16.6834	17.0000	0.0000	17.0000	91.1267	0.0000	91.1267	326.7242	13.0642	28.7031	41.7672	0.0000	0.0000	0.0000	0.0000
2029	17.0171	0.0000	17.0171	17.0000	0.0000	17.0000	95.1363	0.0000	95.1363	369.6551	14.4542	33.1241	47.5783	0.0000	0.0000	0.0000	0.0000
NOMINAL	143.9635	0.0000	143.9635	156.4000	0.0000	156.4000	788.5321	0.0000	788.5321	1,880.4735	71.0766	159.6354	230.7120	0.0000	0.0000	0.0000	0.0000
NPV	107.8373	0.0000	107.8373	118.3574	0.0000	118.3574	590.2605	0.0000	590.2605		48.2013	108.3705	156.5717		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Ceiling Insulation Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	11.726	64.051	0.000	75.777	0.000	0.000	0.716	0.000	0.716	(75.061)	(75.061)
2021	0.000	12.303	67.198	0.000	79.501	0.000	0.000	2.156	0.000	2.156	(77.345)	(147.685)
2022	0.000	12.897	70.446	0.000	83.343	0.000	0.000	4.099	0.000	4.099	(79.245)	(217.552)
2023	0.000	13.511	73.797	0.000	87.308	0.000	0.000	6.195	0.000	6.195	(81.113)	(284.702)
2024	0.000	13.962	76.264	0.000	90.226	0.000	0.000	6.833	0.000	6.833	(83.393)	(349.525)
2025	0.000	14.611	79.809	0.000	94.421	0.000	0.000	11.162	0.000	11.162	(83.259)	(410.294)
2026	0.000	15.281	83.466	0.000	98.747	0.000	0.000	13.931	0.000	13.931	(84.816)	(468.422)
2027	0.000	15.971	87.238	0.000	103.209	0.000	0.000	16.809	0.000	16.809	(86.400)	(524.021)
2028	0.000	16.683	91.127	0.000	107.810	0.000	0.000	19.824	0.000	19.824	(87.986)	(577.184)
2029	0.000	17.017	95.136	0.000	112.153	0.000	0.000	19.356	0.000	19.356	(92.797)	(629.833)
NOMINAL	0.000	143.963	788.532	0.000	932.496	0.000	0.000	101.080	0.000	101.080	(831.415)	
NPV	0.000	107.837	590.261	0.000	698.098	0.000	0.000	68.265	0.000	68.265	(629.833)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.10							





PROGRAM: Residential High Performance Window Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.26 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.27 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	345.7 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	332.2 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	111.5 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	720.0 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.50 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	300 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Residential High Performance Window Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	206	206	3.00	3.94	3.00	3.00	1	1
2021	412	412	3.26	3.92	3.26	3.26	1	1
2022	618	618	3.41	4.41	3.41	3.41	1	1
2023	824	824	3.53	4.70	3.53	3.53	1	1
2024	1,030	1,030	3.60	3.98	3.60	3.60	1	1
2025	1,236	1,236	3.70	5.26	3.70	3.70	1	1
2026	1,442	1,442	3.77	5.49	3.77	3.77	1	1
2027	1,648	1,648	3.90	5.67	3.90	3.90	1	1
2028	1,854	1,854	4.00	5.83	4.00	4.00	1	1
2029	2,060	2,060	3.91	5.03	3.91	3.91	1	1



INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential High Performance Window Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1)	(1A)*	(2)	(2A)*	(3)	(4)	(5)	(6)	(6A)	(7)
Year	VALUE OF DEFERRAL FACTOR	AVOIDED GEN UNIT CAPACITY COST \$(000)	AVOIDED ANNUAL UNIT KWH GEN (000)	AVOIDED UNIT FIXED O&M COST \$(000)	AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	AVOIDED GEN UNIT FUEL COST \$(000)	REPLACEMENT FUEL COST \$(000)	AVOIDED PURCHASED CAPACITY COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential High Performance Window Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.402845
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4.181831
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	7.847387
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	11.701650
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	12.753784
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	20.601170
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	25.411433
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	30.292907
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	35.294369
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	34.041422
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	183.528799
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	124.434044

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential High Performance Window Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	35.6052	1.4028	0.0000	0.0000	1.4028	1.4028
2021	106.8156	4.1818	0.0000	0.0000	4.1818	4.1818
2022	178.0260	7.8474	0.0000	0.0000	7.8474	7.8474
2023	249.2364	11.7016	0.0000	0.0000	11.7016	11.7016
2024	320.4468	12.7538	0.0000	0.0000	12.7538	12.7538
2025	391.6572	20.6012	0.0000	0.0000	20.6012	20.6012
2026	462.8676	25.4114	0.0000	0.0000	25.4114	25.4114
2027	534.0780	30.2929	0.0000	0.0000	30.2929	30.2929
2028	605.2884	35.2944	0.0000	0.0000	35.2944	35.2944
2029	676.4989	34.0414	0.0000	0.0000	34.0414	34.0414
NOMINAL	3,560.5203	183.5288	0.0000	0.0000	183.5288	183.5288
NPV		124.4340	0.0000	0.0000	124.4340	124.4340

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
PROGRAM: Residential High Performance Window Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES ----->							<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	22.9646	0.0000	22.9646	61.8000	0.0000	61.8000	148.3200	0.0000	148.3200	34.2166	1.0280	2.5656	3.5936	0.0000	0.0000	0.0000	0.0000
2021	23.4239	0.0000	23.4239	61.8000	0.0000	61.8000	151.2864	0.0000	151.2864	102.6498	3.3481	7.8506	11.1987	0.0000	0.0000	0.0000	0.0000
2022	23.8924	0.0000	23.8924	61.8000	0.0000	61.8000	154.3121	0.0000	154.3121	171.0830	5.8320	13.3460	19.1781	0.0000	0.0000	0.0000	0.0000
2023	24.3703	0.0000	24.3703	61.8000	0.0000	61.8000	157.3984	0.0000	157.3984	239.5162	8.4430	19.0582	27.5011	0.0000	0.0000	0.0000	0.0000
2024	24.8577	0.0000	24.8577	61.8000	0.0000	61.8000	160.5463	0.0000	160.5463	307.9494	11.0742	24.9934	36.0676	0.0000	0.0000	0.0000	0.0000
2025	25.3548	0.0000	25.3548	61.8000	0.0000	61.8000	163.7573	0.0000	163.7573	376.3826	13.9377	31.1584	45.0962	0.0000	0.0000	0.0000	0.0000
2026	25.8619	0.0000	25.8619	61.8000	0.0000	61.8000	167.0324	0.0000	167.0324	444.8158	16.7579	37.5601	54.3180	0.0000	0.0000	0.0000	0.0000
2027	26.3792	0.0000	26.3792	61.8000	0.0000	61.8000	170.3731	0.0000	170.3731	513.2490	20.0409	44.2053	64.2463	0.0000	0.0000	0.0000	0.0000
2028	26.9067	0.0000	26.9067	61.8000	0.0000	61.8000	173.7805	0.0000	173.7805	581.6822	23.2587	51.1014	74.3601	0.0000	0.0000	0.0000	0.0000
2029	27.4449	0.0000	27.4449	61.8000	0.0000	61.8000	177.2561	0.0000	177.2561	650.1154	25.4208	58.2556	83.6764	0.0000	0.0000	0.0000	0.0000
NOMINAL	251.4565	0.0000	251.4565	618.0000	0.0000	618.0000	1,624.0626	0.0000	1,624.0626	3,421.6600	129.1413	290.0946	419.2359	0.0000	0.0000	0.0000	0.0000
NPV	190.5553	0.0000	190.5553	473.1472	0.0000	473.1472	1,230.7250	0.0000	1,230.7250		87.9416	197.7670	285.7087		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential High Performance Window Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	22.965	148.320	0.000	171.285	0.000	0.000	1.403	0.000	1.403	(169.882)	(169.882)
2021	0.000	23.424	151.286	0.000	174.710	0.000	0.000	4.182	0.000	4.182	(170.529)	(330.002)
2022	0.000	23.892	154.312	0.000	178.205	0.000	0.000	7.847	0.000	7.847	(170.357)	(480.199)
2023	0.000	24.370	157.398	0.000	181.769	0.000	0.000	11.702	0.000	11.702	(170.067)	(620.989)
2024	0.000	24.858	160.546	0.000	185.404	0.000	0.000	12.754	0.000	12.754	(172.650)	(755.194)
2025	0.000	25.355	163.757	0.000	189.112	0.000	0.000	20.601	0.000	20.601	(168.511)	(878.187)
2026	0.000	25.862	167.032	0.000	192.894	0.000	0.000	25.411	0.000	25.411	(167.483)	(992.969)
2027	0.000	26.379	170.373	0.000	196.752	0.000	0.000	30.293	0.000	30.293	(166.459)	(1,100.086)
2028	0.000	26.907	173.781	0.000	200.687	0.000	0.000	35.294	0.000	35.294	(165.393)	(1,200.022)
2029	0.000	27.445	177.256	0.000	204.701	0.000	0.000	34.041	0.000	34.041	(170.660)	(1,296.846)
NOMINAL	0.000	251.456	1,624.063	0.000	1,875.519	0.000	0.000	183.529	0.000	183.529	(1,691.990)	
NPV	0.000	190.555	1,230.725	0.000	1,421.280	0.000	0.000	124.434	0.000	124.434	(1,296.846)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.09							







PROGRAM: Residential Efficient Electric Heat Pump SEER 15 Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.15 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.16 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	262.2 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	252.0 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	84.6 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	474.0 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.50 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	102 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Residential Efficient Electric Heat Pump SEER 15 Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	365	365	3.00	3.94	3.00	3.00	1	1
2021	730	730	3.26	3.92	3.26	3.26	1	1
2022	1,095	1,095	3.41	4.41	3.41	3.41	1	1
2023	1,460	1,460	3.53	4.70	3.53	3.53	1	1
2024	1,825	1,825	3.60	3.98	3.60	3.60	1	1
2025	2,190	2,190	3.70	5.26	3.70	3.70	1	1
2026	2,555	2,555	3.77	5.49	3.77	3.77	1	1
2027	2,920	2,920	3.90	5.67	3.90	3.90	1	1
2028	3,285	3,285	4.00	5.83	4.00	4.00	1	1
2029	3,650	3,650	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 15 Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 15 Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.885542
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	5.620734
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	10.547550
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	15.728006
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	17.142162
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	27.689713
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	34.155112
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	40.716225
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	47.438613
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	45.754547
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	246.678204
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	167.249864

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 15 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	47.8564	1.8855	0.0000	0.0000	1.8855	1.8855
2021	143.5692	5.6207	0.0000	0.0000	5.6207	5.6207
2022	239.2820	10.5476	0.0000	0.0000	10.5476	10.5476
2023	334.9948	15.7280	0.0000	0.0000	15.7280	15.7280
2024	430.7076	17.1422	0.0000	0.0000	17.1422	17.1422
2025	526.4204	27.6897	0.0000	0.0000	27.6897	27.6897
2026	622.1332	34.1551	0.0000	0.0000	34.1551	34.1551
2027	717.8460	40.7162	0.0000	0.0000	40.7162	40.7162
2028	813.5588	47.4386	0.0000	0.0000	47.4386	47.4386
2029	909.2716	45.7545	0.0000	0.0000	45.7545	45.7545
NOMINAL	4,785.6400	246.6782	0.0000	0.0000	246.6782	246.6782
NPV		167.2499	0.0000	0.0000	167.2499	167.2499

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
PROGRAM: Residential Efficient Electric Heat Pump SEER 15 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES ----->							<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	30.8664	0.0000	30.8664	37.2300	0.0000	37.2300	173.0100	0.0000	173.0100	45.9900	1.3818	3.4483	4.8301	0.0000	0.0000	0.0000	0.0000
2021	31.4838	0.0000	31.4838	37.2300	0.0000	37.2300	176.4702	0.0000	176.4702	137.9700	4.5001	10.5519	15.0520	0.0000	0.0000	0.0000	0.0000
2022	32.1134	0.0000	32.1134	37.2300	0.0000	37.2300	179.9996	0.0000	179.9996	229.9500	7.8387	17.9382	25.7769	0.0000	0.0000	0.0000	0.0000
2023	32.7557	0.0000	32.7557	37.2300	0.0000	37.2300	183.5996	0.0000	183.5996	321.9300	11.3481	25.6158	36.9638	0.0000	0.0000	0.0000	0.0000
2024	33.4108	0.0000	33.4108	37.2300	0.0000	37.2300	187.2716	0.0000	187.2716	413.9100	14.8846	33.5933	48.4779	0.0000	0.0000	0.0000	0.0000
2025	34.0790	0.0000	34.0790	37.2300	0.0000	37.2300	191.0170	0.0000	191.0170	505.8900	18.7335	41.8796	60.6131	0.0000	0.0000	0.0000	0.0000
2026	34.7606	0.0000	34.7606	37.2300	0.0000	37.2300	194.8374	0.0000	194.8374	597.8700	22.5240	50.4839	73.0080	0.0000	0.0000	0.0000	0.0000
2027	35.4558	0.0000	35.4558	37.2300	0.0000	37.2300	198.7341	0.0000	198.7341	689.8500	26.9367	59.4157	86.3524	0.0000	0.0000	0.0000	0.0000
2028	36.1649	0.0000	36.1649	37.2300	0.0000	37.2300	202.7088	0.0000	202.7088	781.8300	31.2617	68.6846	99.9463	0.0000	0.0000	0.0000	0.0000
2029	36.8882	0.0000	36.8882	37.2300	0.0000	37.2300	206.7630	0.0000	206.7630	873.8100	34.1677	78.3004	112.4681	0.0000	0.0000	0.0000	0.0000
NOMINAL	337.9787	0.0000	337.9787	372.3000	0.0000	372.3000	1,894.4112	0.0000	1,894.4112	4,599.0000	173.5769	389.9117	563.4885	0.0000	0.0000	0.0000	0.0000
NPV	256.1224	0.0000	256.1224	285.0368	0.0000	285.0368	1,435.5969	0.0000	1,435.5969		118.2010	265.8156	384.0166		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 15 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	30.866	173.010	0.000	203.876	0.000	0.000	1.886	0.000	1.886	(201.991)	(201.991)
2021	0.000	31.484	176.470	0.000	207.954	0.000	0.000	5.621	0.000	5.621	(202.333)	(391.975)
2022	0.000	32.113	180.000	0.000	212.113	0.000	0.000	10.548	0.000	10.548	(201.565)	(569.687)
2023	0.000	32.756	183.600	0.000	216.355	0.000	0.000	15.728	0.000	15.728	(200.627)	(735.776)
2024	0.000	33.411	187.272	0.000	220.682	0.000	0.000	17.142	0.000	17.142	(203.540)	(893.993)
2025	0.000	34.079	191.017	0.000	225.096	0.000	0.000	27.690	0.000	27.690	(197.406)	(1,038.076)
2026	0.000	34.761	194.837	0.000	229.598	0.000	0.000	34.155	0.000	34.155	(195.443)	(1,172.020)
2027	0.000	35.456	198.734	0.000	234.190	0.000	0.000	40.716	0.000	40.716	(193.474)	(1,296.521)
2028	0.000	36.165	202.709	0.000	238.874	0.000	0.000	47.439	0.000	47.439	(191.435)	(1,412.192)
2029	0.000	36.888	206.763	0.000	243.651	0.000	0.000	45.755	0.000	45.755	(197.897)	(1,524.470)
NOMINAL	0.000	337.979	1,894.411	0.000	2,232.390	0.000	0.000	246.678	0.000	246.678	(1,985.712)	
NPV	0.000	256.122	1,435.597	0.000	1,691.719	0.000	0.000	167.250	0.000	167.250	(1,524.470)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.10							





PROGRAM: Residential Efficient Electric Heat Pump SEER 16 Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.27	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.28	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	490.1	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	471.0	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	158.1	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	1,385.0	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.50	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	252	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03

PROGRAM: Residential Efficient Electric Heat Pump SEER 16 Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	432	432	3.00	3.94	3.00	3.00	1	1
2021	864	864	3.26	3.92	3.26	3.26	1	1
2022	1,296	1,296	3.41	4.41	3.41	3.41	1	1
2023	1,728	1,728	3.53	4.70	3.53	3.53	1	1
2024	2,160	2,160	3.60	3.98	3.60	3.60	1	1
2025	2,592	2,592	3.70	5.26	3.70	3.70	1	1
2026	3,024	3,024	3.77	5.49	3.77	3.77	1	1
2027	3,456	3,456	3.90	5.67	3.90	3.90	1	1
2028	3,888	3,888	4.00	5.83	4.00	4.00	1	1
2029	4,320	4,320	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%



AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 16 Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 16 Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4.171070
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	12.433812
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	23.332585
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	34.792442
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	37.920744
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	61.253329
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	75.555654
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	90.069707
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	104.940525
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	101.215146
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	545.685014
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	369.978955

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 16 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	105.8647	4.1711	0.0000	0.0000	4.1711	4.1711
2021	317.5942	12.4338	0.0000	0.0000	12.4338	12.4338
2022	529.3236	23.3326	0.0000	0.0000	23.3326	23.3326
2023	741.0531	34.7924	0.0000	0.0000	34.7924	34.7924
2024	952.7825	37.9207	0.0000	0.0000	37.9207	37.9207
2025	1,164.5120	61.2533	0.0000	0.0000	61.2533	61.2533
2026	1,376.2414	75.5557	0.0000	0.0000	75.5557	75.5557
2027	1,587.9709	90.0697	0.0000	0.0000	90.0697	90.0697
2028	1,799.7003	104.9405	0.0000	0.0000	104.9405	104.9405
2029	2,011.4298	101.2151	0.0000	0.0000	101.2151	101.2151
NOMINAL	10,586.4724	545.6850	0.0000	0.0000	545.6850	545.6850
NPV		369.9790	0.0000	0.0000	369.9790	369.9790

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Residential Efficient Electric Heat Pump SEER 16 Rebates

(1)	(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18)																	
	<----- UTILITY PROGRAM COSTS & REBATES ----->							>----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	68.2806	0.0000	68.2806	108.8640	0.0000	108.8640	598.3200	0.0000	598.3200	101.7360	3.0567	7.6282	10.6848	0.0000	0.0000	0.0000	0.0000	
2021	69.6463	0.0000	69.6463	108.8640	0.0000	108.8640	610.2864	0.0000	610.2864	305.2080	9.9548	23.3422	33.2970	0.0000	0.0000	0.0000	0.0000	
2022	71.0392	0.0000	71.0392	108.8640	0.0000	108.8640	622.4921	0.0000	622.4921	508.6800	17.3403	39.6817	57.0220	0.0000	0.0000	0.0000	0.0000	
2023	72.4600	0.0000	72.4600	108.8640	0.0000	108.8640	634.9420	0.0000	634.9420	712.1520	25.1034	56.6655	81.7689	0.0000	0.0000	0.0000	0.0000	
2024	73.9092	0.0000	73.9092	108.8640	0.0000	108.8640	647.6408	0.0000	647.6408	915.6240	32.9267	74.3127	107.2395	0.0000	0.0000	0.0000	0.0000	
2025	75.3873	0.0000	75.3873	108.8640	0.0000	108.8640	660.5936	0.0000	660.5936	1,119.0960	41.4409	92.6432	134.0841	0.0000	0.0000	0.0000	0.0000	
2026	76.8951	0.0000	76.8951	108.8640	0.0000	108.8640	673.8055	0.0000	673.8055	1,322.5680	49.8262	111.6772	161.5034	0.0000	0.0000	0.0000	0.0000	
2027	78.4330	0.0000	78.4330	108.8640	0.0000	108.8640	687.2816	0.0000	687.2816	1,526.0400	59.5875	131.4355	191.0230	0.0000	0.0000	0.0000	0.0000	
2028	80.0017	0.0000	80.0017	108.8640	0.0000	108.8640	701.0272	0.0000	701.0272	1,729.5120	69.1551	151.9394	221.0944	0.0000	0.0000	0.0000	0.0000	
2029	81.6017	0.0000	81.6017	108.8640	0.0000	108.8640	715.0478	0.0000	715.0478	1,932.9840	75.5835	173.2109	248.7944	0.0000	0.0000	0.0000	0.0000	
NOMINAL	747.6539	0.0000	747.6539	1,088.6400	0.0000	1,088.6400	6,551.4371	0.0000	6,551.4371	10,173.6000	383.9751	862.5365	1,246.5116	0.0000	0.0000	0.0000	0.0000	
NPV	566.5769	0.0000	566.5769	833.4741	0.0000	833.4741	4,964.7208	0.0000	4,964.7208		261.4763	588.0195	849.4958		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 16 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	68.281	598.320	0.000	666.601	0.000	0.000	4.171	0.000	4.171	(662.430)	(662.430)
2021	0.000	69.646	610.286	0.000	679.933	0.000	0.000	12.434	0.000	12.434	(667.499)	(1,289.189)
2022	0.000	71.039	622.492	0.000	693.531	0.000	0.000	23.333	0.000	23.333	(670.199)	(1,880.076)
2023	0.000	72.460	634.942	0.000	707.402	0.000	0.000	34.792	0.000	34.792	(672.609)	(2,436.895)
2024	0.000	73.909	647.641	0.000	721.550	0.000	0.000	37.921	0.000	37.921	(683.629)	(2,968.296)
2025	0.000	75.387	660.594	0.000	735.981	0.000	0.000	61.253	0.000	61.253	(674.728)	(3,460.767)
2026	0.000	76.895	673.805	0.000	750.701	0.000	0.000	75.556	0.000	75.556	(675.145)	(3,923.467)
2027	0.000	78.433	687.282	0.000	765.715	0.000	0.000	90.070	0.000	90.070	(675.645)	(4,358.248)
2028	0.000	80.002	701.027	0.000	781.029	0.000	0.000	104.941	0.000	104.941	(676.088)	(4,766.762)
2029	0.000	81.602	715.048	0.000	796.649	0.000	0.000	101.215	0.000	101.215	(695.434)	(5,161.319)
NOMINAL	0.000	747.654	6,551.437	0.000	7,299.091	0.000	0.000	545.685	0.000	545.685	(6,753.406)	
NPV	0.000	566.577	4,964.721	0.000	5,531.298	0.000	0.000	369.979	0.000	369.979	(5,161.319)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.07							





PROGRAM: Residential Efficient Electric Heat Pump SEER 17 Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.39	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.41	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	683.7	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	657.0	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	220.5	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	2,250.0	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.50	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	384	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03



INPUT DATA -- PART 2

PROGRAM: Residential Efficient Electric Heat Pump SEER 17 Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	109	109	3.00	3.94	3.00	3.00	1	1
2021	218	218	3.26	3.92	3.26	3.26	1	1
2022	327	327	3.41	4.41	3.41	3.41	1	1
2023	436	436	3.53	4.70	3.53	3.53	1	1
2024	545	545	3.60	3.98	3.60	3.60	1	1
2025	654	654	3.70	5.26	3.70	3.70	1	1
2026	763	763	3.77	5.49	3.77	3.77	1	1
2027	872	872	3.90	5.67	3.90	3.90	1	1
2028	981	981	4.00	5.83	4.00	4.00	1	1
2029	1,090	1,090	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 17 Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 17 Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.468029
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4.376143
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	8.212021
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	12.245376
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	13.346398
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	21.558419
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	26.592195
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	31.700489
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	36.934349
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	35.623183
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	192.056602
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	130.215965

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 17 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	37.2596	1.4680	0.0000	0.0000	1.4680	1.4680
2021	111.7789	4.3761	0.0000	0.0000	4.3761	4.3761
2022	186.2981	8.2120	0.0000	0.0000	8.2120	8.2120
2023	260.8174	12.2454	0.0000	0.0000	12.2454	12.2454
2024	335.3366	13.3464	0.0000	0.0000	13.3464	13.3464
2025	409.8559	21.5584	0.0000	0.0000	21.5584	21.5584
2026	484.3751	26.5922	0.0000	0.0000	26.5922	26.5922
2027	558.8944	31.7005	0.0000	0.0000	31.7005	31.7005
2028	633.4136	36.9343	0.0000	0.0000	36.9343	36.9343
2029	707.9329	35.6232	0.0000	0.0000	35.6232	35.6232
NOMINAL	3,725.9625	192.0566	0.0000	0.0000	192.0566	192.0566
NPV		130.2160	0.0000	0.0000	130.2160	130.2160

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Residential Efficient Electric Heat Pump SEER 17 Rebates

(1)	(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18)																	
	<----- UTILITY PROGRAM COSTS & REBATES ----->					<----- PARTICIPATING CUSTOMER COSTS & BENEFITS ----->												
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	24.0317	0.0000	24.0317	41.8560	0.0000	41.8560	245.2500	0.0000	245.2500	35.8065	1.0758	2.6848	3.7606	0.0000	0.0000	0.0000	0.0000	
2021	24.5124	0.0000	24.5124	41.8560	0.0000	41.8560	250.1550	0.0000	250.1550	107.4195	3.5036	8.2154	11.7190	0.0000	0.0000	0.0000	0.0000	
2022	25.0026	0.0000	25.0026	41.8560	0.0000	41.8560	255.1581	0.0000	255.1581	179.0325	6.1030	13.9662	20.0692	0.0000	0.0000	0.0000	0.0000	
2023	25.5026	0.0000	25.5026	41.8560	0.0000	41.8560	260.2613	0.0000	260.2613	250.6455	8.8353	19.9437	28.7790	0.0000	0.0000	0.0000	0.0000	
2024	26.0127	0.0000	26.0127	41.8560	0.0000	41.8560	265.4665	0.0000	265.4665	322.2585	11.5887	26.1547	37.7435	0.0000	0.0000	0.0000	0.0000	
2025	26.5330	0.0000	26.5330	41.8560	0.0000	41.8560	270.7758	0.0000	270.7758	393.8715	14.5853	32.6062	47.1916	0.0000	0.0000	0.0000	0.0000	
2026	27.0636	0.0000	27.0636	41.8560	0.0000	41.8560	276.1913	0.0000	276.1913	465.4845	17.5366	39.3054	56.8419	0.0000	0.0000	0.0000	0.0000	
2027	27.6049	0.0000	27.6049	41.8560	0.0000	41.8560	281.7152	0.0000	281.7152	537.0975	20.9721	46.2594	67.2315	0.0000	0.0000	0.0000	0.0000	
2028	28.1570	0.0000	28.1570	41.8560	0.0000	41.8560	287.3495	0.0000	287.3495	608.7105	24.3395	53.4758	77.8153	0.0000	0.0000	0.0000	0.0000	
2029	28.7201	0.0000	28.7201	41.8560	0.0000	41.8560	293.0965	0.0000	293.0965	680.3235	26.6020	60.9625	87.5645	0.0000	0.0000	0.0000	0.0000	
NOMINAL	263.1406	0.0000	263.1406	418.5600	0.0000	418.5600	2,685.4191	0.0000	2,685.4191	3,580.6500	135.1420	303.5741	438.7161	0.0000	0.0000	0.0000	0.0000	
NPV	199.4096	0.0000	199.4096	320.4539	0.0000	320.4539	2,035.0277	0.0000	2,035.0277		92.0279	206.9564	298.9844		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 17 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	24.032	245.250	0.000	269.282	0.000	0.000	1.468	0.000	1.468	(267.814)	(267.814)
2021	0.000	24.512	250.155	0.000	274.667	0.000	0.000	4.376	0.000	4.376	(270.291)	(521.608)
2022	0.000	25.003	255.158	0.000	280.161	0.000	0.000	8.212	0.000	8.212	(271.949)	(761.374)
2023	0.000	25.503	260.261	0.000	285.764	0.000	0.000	12.245	0.000	12.245	(273.519)	(987.806)
2024	0.000	26.013	265.466	0.000	291.479	0.000	0.000	13.346	0.000	13.346	(278.133)	(1,204.005)
2025	0.000	26.533	270.776	0.000	297.309	0.000	0.000	21.558	0.000	21.558	(275.750)	(1,405.270)
2026	0.000	27.064	276.191	0.000	303.255	0.000	0.000	26.592	0.000	26.592	(276.663)	(1,594.877)
2027	0.000	27.605	281.715	0.000	309.320	0.000	0.000	31.700	0.000	31.700	(277.620)	(1,773.527)
2028	0.000	28.157	287.349	0.000	315.506	0.000	0.000	36.934	0.000	36.934	(278.572)	(1,941.849)
2029	0.000	28.720	293.096	0.000	321.817	0.000	0.000	35.623	0.000	35.623	(286.193)	(2,104.221)
NOMINAL	0.000	263.141	2,685.419	0.000	2,948.560	0.000	0.000	192.057	0.000	192.057	(2,756.503)	
NPV	0.000	199.410	2,035.028	0.000	2,234.437	0.000	0.000	130.216	0.000	130.216	(2,104.221)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.06							







PROGRAM: Residential Efficient Electric Heat Pump SEER 18 Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.48 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.50 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	861.6 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	828.0 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	277.9 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	3,013.0 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.50 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	501 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Residential Efficient Electric Heat Pump SEER 18 Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	85	85	3.00	3.94	3.00	3.00	1	1
2021	170	170	3.26	3.92	3.26	3.26	1	1
2022	255	255	3.41	4.41	3.41	3.41	1	1
2023	340	340	3.53	4.70	3.53	3.53	1	1
2024	425	425	3.60	3.98	3.60	3.60	1	1
2025	510	510	3.70	5.26	3.70	3.70	1	1
2026	595	595	3.77	5.49	3.77	3.77	1	1
2027	680	680	3.90	5.67	3.90	3.90	1	1
2028	765	765	4.00	5.83	4.00	4.00	1	1
2029	850	850	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 18 Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 18 Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.442753
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4.300797
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	8.070631
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	12.034541
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	13.116606
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	21.187236
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	26.134342
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	31.154685
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	36.298430
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	35.009839
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	188.749859
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	127.973966

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 18 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	36.6181	1.4428	0.0000	0.0000	1.4428	1.4428
2021	109.8543	4.3008	0.0000	0.0000	4.3008	4.3008
2022	183.0905	8.0706	0.0000	0.0000	8.0706	8.0706
2023	256.3267	12.0345	0.0000	0.0000	12.0345	12.0345
2024	329.5630	13.1166	0.0000	0.0000	13.1166	13.1166
2025	402.7992	21.1872	0.0000	0.0000	21.1872	21.1872
2026	476.0354	26.1343	0.0000	0.0000	26.1343	26.1343
2027	549.2716	31.1547	0.0000	0.0000	31.1547	31.1547
2028	622.5078	36.2984	0.0000	0.0000	36.2984	36.2984
2029	695.7440	35.0098	0.0000	0.0000	35.0098	35.0098
NOMINAL	3,661.8106	188.7499	0.0000	0.0000	188.7499	188.7499
NPV		127.9740	0.0000	0.0000	127.9740	127.9740

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Residential Efficient Electric Heat Pump SEER 18 Rebates

(1)	(2)----- UTILITY PROGRAM COSTS & REBATES ----->					<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->													(18)
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)		
2020	23.6179	0.0000	23.6179	42.5850	0.0000	42.5850	256.1050	0.0000	256.1050	35.1900	1.0573	2.6385	3.6958	0.0000	0.0000	0.0000	0.0000		
2021	24.0903	0.0000	24.0903	42.5850	0.0000	42.5850	261.2271	0.0000	261.2271	105.5700	3.4433	8.0740	11.5173	0.0000	0.0000	0.0000	0.0000		
2022	24.5721	0.0000	24.5721	42.5850	0.0000	42.5850	266.4516	0.0000	266.4516	175.9500	5.9979	13.7257	19.7237	0.0000	0.0000	0.0000	0.0000		
2023	25.0636	0.0000	25.0636	42.5850	0.0000	42.5850	271.7807	0.0000	271.7807	246.3300	8.6831	19.6003	28.2835	0.0000	0.0000	0.0000	0.0000		
2024	25.5648	0.0000	25.5648	42.5850	0.0000	42.5850	277.2163	0.0000	277.2163	316.7100	11.3892	25.7044	37.0936	0.0000	0.0000	0.0000	0.0000		
2025	26.0761	0.0000	26.0761	42.5850	0.0000	42.5850	282.7606	0.0000	282.7606	387.0900	14.3342	32.0449	46.3791	0.0000	0.0000	0.0000	0.0000		
2026	26.5976	0.0000	26.5976	42.5850	0.0000	42.5850	288.4158	0.0000	288.4158	457.4700	17.2346	38.6286	55.8632	0.0000	0.0000	0.0000	0.0000		
2027	27.1296	0.0000	27.1296	42.5850	0.0000	42.5850	294.1841	0.0000	294.1841	527.8500	20.6110	45.4629	66.0739	0.0000	0.0000	0.0000	0.0000		
2028	27.6722	0.0000	27.6722	42.5850	0.0000	42.5850	300.0678	0.0000	300.0678	598.2300	23.9204	52.5551	76.4755	0.0000	0.0000	0.0000	0.0000		
2029	28.2256	0.0000	28.2256	42.5850	0.0000	42.5850	306.0692	0.0000	306.0692	668.6100	26.1440	59.9128	86.0568	0.0000	0.0000	0.0000	0.0000		
NOMINAL	258.6100	0.0000	258.6100	425.8500	0.0000	425.8500	2,804.2783	0.0000	2,804.2783	3,519.0000	132.8152	298.3473	431.1624	0.0000	0.0000	0.0000	0.0000		
NPV	195.9763	0.0000	195.9763	326.0352	0.0000	326.0352	2,125.1000	0.0000	2,125.1000		90.4434	203.3931	293.8366		0.0000	0.0000	0.0000		

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 18 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	23.618	256.105	0.000	279.723	0.000	0.000	1.443	0.000	1.443	(278.280)	(278.280)
2021	0.000	24.090	261.227	0.000	285.317	0.000	0.000	4.301	0.000	4.301	(281.017)	(542.146)
2022	0.000	24.572	266.452	0.000	291.024	0.000	0.000	8.071	0.000	8.071	(282.953)	(791.614)
2023	0.000	25.064	271.781	0.000	296.844	0.000	0.000	12.035	0.000	12.035	(284.810)	(1,027.393)
2024	0.000	25.565	277.216	0.000	302.781	0.000	0.000	13.117	0.000	13.117	(289.665)	(1,252.556)
2025	0.000	26.076	282.761	0.000	308.837	0.000	0.000	21.187	0.000	21.187	(287.650)	(1,462.506)
2026	0.000	26.598	288.416	0.000	315.013	0.000	0.000	26.134	0.000	26.134	(288.879)	(1,660.485)
2027	0.000	27.130	294.184	0.000	321.314	0.000	0.000	31.155	0.000	31.155	(290.159)	(1,847.204)
2028	0.000	27.672	300.068	0.000	327.740	0.000	0.000	36.298	0.000	36.298	(291.442)	(2,023.302)
2029	0.000	28.226	306.069	0.000	334.295	0.000	0.000	35.010	0.000	35.010	(299.285)	(2,193.102)
NOMINAL	0.000	258.610	2,804.278	0.000	3,062.888	0.000	0.000	188.750	0.000	188.750	(2,874.138)	
NPV	0.000	195.976	2,125.100	0.000	2,321.076	0.000	0.000	127.974	0.000	127.974	(2,193.102)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.06							





PROGRAM: Residential Efficient Electric Heat Pump SEER 19 Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.57 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.59 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	980.2 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	942.0 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	316.1 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	3,588.7 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.50 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	609 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Residential Efficient Electric Heat Pump SEER 19 Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	54	54	3.00	3.94	3.00	3.00	1	1
2021	108	108	3.26	3.92	3.26	3.26	1	1
2022	162	162	3.41	4.41	3.41	3.41	1	1
2023	216	216	3.53	4.70	3.53	3.53	1	1
2024	270	270	3.60	3.98	3.60	3.60	1	1
2025	324	324	3.70	5.26	3.70	3.70	1	1
2026	378	378	3.77	5.49	3.77	3.77	1	1
2027	432	432	3.90	5.67	3.90	3.90	1	1
2028	486	486	4.00	5.83	4.00	4.00	1	1
2029	540	540	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0



CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 19 Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 19 Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.042768
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.108453
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	5.833146
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	8.698110
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	9.480186
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	15.313332
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	18.888913
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	22.517427
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	26.235131
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	25.303786
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	136.421254
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	92.494739

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

## \* WORKSHEET : DSM PROGRAM FUEL SAVINGS

PROGRAM: Residential Efficient Electric Heat Pump SEER 19 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	26.4662	1.0428	0.0000	0.0000	1.0428	1.0428
2021	79.3985	3.1085	0.0000	0.0000	3.1085	3.1085
2022	132.3309	5.8331	0.0000	0.0000	5.8331	5.8331
2023	185.2633	8.6981	0.0000	0.0000	8.6981	8.6981
2024	238.1956	9.4802	0.0000	0.0000	9.4802	9.4802
2025	291.1280	15.3133	0.0000	0.0000	15.3133	15.3133
2026	344.0604	18.8889	0.0000	0.0000	18.8889	18.8889
2027	396.9927	22.5174	0.0000	0.0000	22.5174	22.5174
2028	449.9251	26.2351	0.0000	0.0000	26.2351	26.2351
2029	502.8574	25.3038	0.0000	0.0000	25.3038	25.3038
NOMINAL	2,646.6181	136.4213	0.0000	0.0000	136.4213	136.4213
NPV		92.4947	0.0000	0.0000	92.4947	92.4947

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Residential Efficient Electric Heat Pump SEER 19 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES -----							----- PARTICIPATING CUSTOMER COSTS & BENEFITS -----										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	17.0702	0.0000	17.0702	32.8860	0.0000	32.8860	193.7880	0.0000	193.7880	25.4340	0.7642	1.9070	2.6712	0.0000	0.0000	0.0000	0.0000
2021	17.4116	0.0000	17.4116	32.8860	0.0000	32.8860	197.6638	0.0000	197.6638	76.3020	2.4887	5.8355	8.3242	0.0000	0.0000	0.0000	0.0000
2022	17.7598	0.0000	17.7598	32.8860	0.0000	32.8860	201.6170	0.0000	201.6170	127.1700	4.3351	9.9204	14.2555	0.0000	0.0000	0.0000	0.0000
2023	18.1150	0.0000	18.1150	32.8860	0.0000	32.8860	205.6494	0.0000	205.6494	178.0380	6.2758	14.1664	20.4422	0.0000	0.0000	0.0000	0.0000
2024	18.4773	0.0000	18.4773	32.8860	0.0000	32.8860	209.7624	0.0000	209.7624	228.9060	8.2317	18.5782	26.8099	0.0000	0.0000	0.0000	0.0000
2025	18.8468	0.0000	18.8468	32.8860	0.0000	32.8860	213.9576	0.0000	213.9576	279.7740	10.3602	23.1608	33.5210	0.0000	0.0000	0.0000	0.0000
2026	19.2238	0.0000	19.2238	32.8860	0.0000	32.8860	218.2368	0.0000	218.2368	330.6420	12.4565	27.9193	40.3758	0.0000	0.0000	0.0000	0.0000
2027	19.6082	0.0000	19.6082	32.8860	0.0000	32.8860	222.6015	0.0000	222.6015	381.5100	14.8969	32.8589	47.7557	0.0000	0.0000	0.0000	0.0000
2028	20.0004	0.0000	20.0004	32.8860	0.0000	32.8860	227.0535	0.0000	227.0535	432.3780	17.2888	37.9848	55.2736	0.0000	0.0000	0.0000	0.0000
2029	20.4004	0.0000	20.4004	32.8860	0.0000	32.8860	231.5946	0.0000	231.5946	483.2460	18.8959	43.3027	62.1986	0.0000	0.0000	0.0000	0.0000
NOMINAL	186.9135	0.0000	186.9135	328.8600	0.0000	328.8600	2,121.9245	0.0000	2,121.9245	2,543.4000	95.9938	215.6341	311.6279	0.0000	0.0000	0.0000	0.0000
NPV	141.6442	0.0000	141.6442	251.7786	0.0000	251.7786	1,608.0080	0.0000	1,608.0080		65.3691	147.0049	212.3740		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 19 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	17.070	193.788	0.000	210.858	0.000	0.000	1.043	0.000	1.043	(209.815)	(209.815)
2021	0.000	17.412	197.664	0.000	215.075	0.000	0.000	3.108	0.000	3.108	(211.967)	(408.845)
2022	0.000	17.760	201.617	0.000	219.377	0.000	0.000	5.833	0.000	5.833	(213.544)	(597.118)
2023	0.000	18.115	205.649	0.000	223.764	0.000	0.000	8.698	0.000	8.698	(215.066)	(775.160)
2024	0.000	18.477	209.762	0.000	228.240	0.000	0.000	9.480	0.000	9.480	(218.759)	(945.207)
2025	0.000	18.847	213.958	0.000	232.804	0.000	0.000	15.313	0.000	15.313	(217.491)	(1,103.950)
2026	0.000	19.224	218.237	0.000	237.461	0.000	0.000	18.889	0.000	18.889	(218.572)	(1,253.744)
2027	0.000	19.608	222.601	0.000	242.210	0.000	0.000	22.517	0.000	22.517	(219.692)	(1,395.118)
2028	0.000	20.000	227.054	0.000	247.054	0.000	0.000	26.235	0.000	26.235	(220.819)	(1,528.543)
2029	0.000	20.400	231.595	0.000	251.995	0.000	0.000	25.304	0.000	25.304	(226.691)	(1,657.157)
NOMINAL	0.000	186.913	2,121.925	0.000	2,308.838	0.000	0.000	136.421	0.000	136.421	(2,172.417)	
NPV	0.000	141.644	1,608.008	0.000	1,749.652	0.000	0.000	92.495	0.000	92.495	(1,657.157)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.05							







PROGRAM: Residential Efficient Electric Heat Pump SEER 20 Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.66	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.69	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	1,130.1	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	1,086.0	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	364.4	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	4,164.3	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.50	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	702	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Residential Efficient Electric Heat Pump SEER 20 Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	25	25	3.00	3.94	3.00	3.00	1	1
2021	50	50	3.26	3.92	3.26	3.26	1	1
2022	75	75	3.41	4.41	3.41	3.41	1	1
2023	100	100	3.53	4.70	3.53	3.53	1	1
2024	125	125	3.60	3.98	3.60	3.60	1	1
2025	150	150	3.70	5.26	3.70	3.70	1	1
2026	175	175	3.77	5.49	3.77	3.77	1	1
2027	200	200	3.90	5.67	3.90	3.90	1	1
2028	225	225	4.00	5.83	4.00	4.00	1	1
2029	250	250	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 20 Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 20 Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.556561
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.659088
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.113351
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4.642480
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	5.059901
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	8.173252
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	10.081662
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	12.018325
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	14.002591
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	13.505501
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	72.812712
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	49.367621

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 20 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	14.1259	0.5566	0.0000	0.0000	0.5566	0.5566
2021	42.3777	1.6591	0.0000	0.0000	1.6591	1.6591
2022	70.6296	3.1134	0.0000	0.0000	3.1134	3.1134
2023	98.8814	4.6425	0.0000	0.0000	4.6425	4.6425
2024	127.1332	5.0599	0.0000	0.0000	5.0599	5.0599
2025	155.3850	8.1733	0.0000	0.0000	8.1733	8.1733
2026	183.6368	10.0817	0.0000	0.0000	10.0817	10.0817
2027	211.8887	12.0183	0.0000	0.0000	12.0183	12.0183
2028	240.1405	14.0026	0.0000	0.0000	14.0026	14.0026
2029	268.3923	13.5055	0.0000	0.0000	13.5055	13.5055
NOMINAL	1,412.5911	72.8127	0.0000	0.0000	72.8127	72.8127
NPV		49.3676	0.0000	0.0000	49.3676	49.3676

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Residential Efficient Electric Heat Pump SEER 20 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES -----							----- PARTICIPATING CUSTOMER COSTS & BENEFITS -----										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM NONREC. REBATES COSTS \$(000)	UTIL NONREC. REBATES COSTS \$(000)	UTIL RECUR. REBATES COSTS \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	9.1109	0.0000	9.1109	17.5500	0.0000	17.5500	104.1083	0.0000	104.1083	13.5750	0.4079	1.0179	1.4257	0.0000	0.0000	0.0000	0.0000
2021	9.2931	0.0000	9.2931	17.5500	0.0000	17.5500	106.1905	0.0000	106.1905	40.7250	1.3283	3.1146	4.4429	0.0000	0.0000	0.0000	0.0000
2022	9.4790	0.0000	9.4790	17.5500	0.0000	17.5500	108.3143	0.0000	108.3143	67.8750	2.3138	5.2949	7.6087	0.0000	0.0000	0.0000	0.0000
2023	9.6686	0.0000	9.6686	17.5500	0.0000	17.5500	110.4806	0.0000	110.4806	95.0250	3.3496	7.5611	10.9107	0.0000	0.0000	0.0000	0.0000
2024	9.8620	0.0000	9.8620	17.5500	0.0000	17.5500	112.6902	0.0000	112.6902	122.1750	4.3935	9.9158	14.3094	0.0000	0.0000	0.0000	0.0000
2025	10.0592	0.0000	10.0592	17.5500	0.0000	17.5500	114.9440	0.0000	114.9440	149.3250	5.5296	12.3617	17.8913	0.0000	0.0000	0.0000	0.0000
2026	10.2604	0.0000	10.2604	17.5500	0.0000	17.5500	117.2429	0.0000	117.2429	176.4750	6.6485	14.9015	21.5500	0.0000	0.0000	0.0000	0.0000
2027	10.4656	0.0000	10.4656	17.5500	0.0000	17.5500	119.5878	0.0000	119.5878	203.6250	7.9510	17.5379	25.4889	0.0000	0.0000	0.0000	0.0000
2028	10.6749	0.0000	10.6749	17.5500	0.0000	17.5500	121.9795	0.0000	121.9795	230.7750	9.2276	20.2738	29.5014	0.0000	0.0000	0.0000	0.0000
2029	10.8884	0.0000	10.8884	17.5500	0.0000	17.5500	124.4191	0.0000	124.4191	257.9250	10.0854	23.1122	33.1975	0.0000	0.0000	0.0000	0.0000
NOMINAL	99.7622	0.0000	99.7622	175.5000	0.0000	175.5000	1,139.9572	0.0000	1,139.9572	1,357.5000	51.2352	115.0913	166.3265	0.0000	0.0000	0.0000	0.0000
NPV	75.6004	0.0000	75.6004	134.3646	0.0000	134.3646	863.8668	0.0000	863.8668		34.8897	78.4616	113.3513		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 20 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	9.111	104.108	0.000	113.219	0.000	0.000	0.557	0.000	0.557	(112.663)	(112.663)
2021	0.000	9.293	106.191	0.000	115.484	0.000	0.000	1.659	0.000	1.659	(113.825)	(219.540)
2022	0.000	9.479	108.314	0.000	117.793	0.000	0.000	3.113	0.000	3.113	(114.680)	(320.649)
2023	0.000	9.669	110.481	0.000	120.149	0.000	0.000	4.642	0.000	4.642	(115.507)	(416.271)
2024	0.000	9.862	112.690	0.000	122.552	0.000	0.000	5.060	0.000	5.060	(117.492)	(507.600)
2025	0.000	10.059	114.944	0.000	125.003	0.000	0.000	8.173	0.000	8.173	(116.830)	(592.872)
2026	0.000	10.260	117.243	0.000	127.503	0.000	0.000	10.082	0.000	10.082	(117.422)	(673.345)
2027	0.000	10.466	119.588	0.000	130.053	0.000	0.000	12.018	0.000	12.018	(118.035)	(749.302)
2028	0.000	10.675	121.980	0.000	132.654	0.000	0.000	14.003	0.000	14.003	(118.652)	(820.995)
2029	0.000	10.888	124.419	0.000	135.308	0.000	0.000	13.506	0.000	13.506	(121.802)	(890.100)
NOMINAL	0.000	99.762	1,139.957	0.000	1,239.719	0.000	0.000	72.813	0.000	72.813	(1,166.907)	
NPV	0.000	75.600	863.867	0.000	939.467	0.000	0.000	49.368	0.000	49.368	(890.100)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.05							





PROGRAM: Residential Efficient Electric Heat Pump SEER 21 Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.72 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.75 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	1,279.9 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	1,230.0 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	412.8 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	4,740.0 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.50 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	789 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Residential Efficient Electric Heat Pump SEER 21 Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	5	5	3.00	3.94	3.00	3.00	1	1
2021	10	10	3.26	3.92	3.26	3.26	1	1
2022	15	15	3.41	4.41	3.41	3.41	1	1
2023	20	20	3.53	4.70	3.53	3.53	1	1
2024	25	25	3.60	3.98	3.60	3.60	1	1
2025	30	30	3.70	5.26	3.70	3.70	1	1
2026	35	35	3.77	5.49	3.77	3.77	1	1
2027	40	40	3.90	5.67	3.90	3.90	1	1
2028	45	45	4.00	5.83	4.00	4.00	1	1
2029	50	50	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 21 Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 21 Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.126072
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.375816
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.705234
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.051612
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.146165
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.851400
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.283691
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.722383
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.171858
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.059257
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	16.493487
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	11.182721

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 21 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	3.1998	0.1261	0.0000	0.0000	0.1261	0.1261
2021	9.5994	0.3758	0.0000	0.0000	0.3758	0.3758
2022	15.9990	0.7052	0.0000	0.0000	0.7052	0.7052
2023	22.3985	1.0516	0.0000	0.0000	1.0516	1.0516
2024	28.7981	1.1462	0.0000	0.0000	1.1462	1.1462
2025	35.1977	1.8514	0.0000	0.0000	1.8514	1.8514
2026	41.5973	2.2837	0.0000	0.0000	2.2837	2.2837
2027	47.9969	2.7224	0.0000	0.0000	2.7224	2.7224
2028	54.3965	3.1719	0.0000	0.0000	3.1719	3.1719
2029	60.7960	3.0593	0.0000	0.0000	3.0593	3.0593
NOMINAL	319.9792	16.4935	0.0000	0.0000	16.4935	16.4935
NPV		11.1827	0.0000	0.0000	11.1827	11.1827

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Residential Efficient Electric Heat Pump SEER 21 Rebates

(1)	(2)----- UTILITY PROGRAM COSTS & REBATES ----->					<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->												(18)
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	2.0638	0.0000	2.0638	3.9450	0.0000	3.9450	23.7000	0.0000	23.7000	3.0750	0.0924	0.2306	0.3230	0.0000	0.0000	0.0000	0.0000	
2021	2.1051	0.0000	2.1051	3.9450	0.0000	3.9450	24.1740	0.0000	24.1740	9.2250	0.3009	0.7055	1.0064	0.0000	0.0000	0.0000	0.0000	
2022	2.1472	0.0000	2.1472	3.9450	0.0000	3.9450	24.6575	0.0000	24.6575	15.3750	0.5241	1.1994	1.7235	0.0000	0.0000	0.0000	0.0000	
2023	2.1901	0.0000	2.1901	3.9450	0.0000	3.9450	25.1506	0.0000	25.1506	21.5250	0.7588	1.7127	2.4715	0.0000	0.0000	0.0000	0.0000	
2024	2.2339	0.0000	2.2339	3.9450	0.0000	3.9450	25.6536	0.0000	25.6536	27.6750	0.9952	2.2461	3.2413	0.0000	0.0000	0.0000	0.0000	
2025	2.2786	0.0000	2.2786	3.9450	0.0000	3.9450	26.1667	0.0000	26.1667	33.8250	1.2526	2.8002	4.0527	0.0000	0.0000	0.0000	0.0000	
2026	2.3242	0.0000	2.3242	3.9450	0.0000	3.9450	26.6900	0.0000	26.6900	39.9750	1.5060	3.3755	4.8815	0.0000	0.0000	0.0000	0.0000	
2027	2.3707	0.0000	2.3707	3.9450	0.0000	3.9450	27.2239	0.0000	27.2239	46.1250	1.8010	3.9727	5.7737	0.0000	0.0000	0.0000	0.0000	
2028	2.4181	0.0000	2.4181	3.9450	0.0000	3.9450	27.7683	0.0000	27.7683	52.2750	2.0902	4.5924	6.6826	0.0000	0.0000	0.0000	0.0000	
2029	2.4664	0.0000	2.4664	3.9450	0.0000	3.9450	28.3237	0.0000	28.3237	58.4250	2.2845	5.2353	7.5199	0.0000	0.0000	0.0000	0.0000	
NOMINAL	22.5981	0.0000	22.5981	39.4500	0.0000	39.4500	259.5084	0.0000	259.5084	307.5000	11.6058	26.0704	37.6762	0.0000	0.0000	0.0000	0.0000	
NPV	17.1250	0.0000	17.1250	30.2033	0.0000	30.2033	196.6571	0.0000	196.6571		7.9032	17.7731	25.6763		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK







PROGRAM: Residential Efficient Electric Heat Pump SEER 22 Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.84 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.87 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	1,450.1 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	1,393.5 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	467.6 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	5,315.7 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.50 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	903 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Residential Efficient Electric Heat Pump SEER 22 Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	3	3	3.00	3.94	3.00	3.00	1	1
2021	6	6	3.26	3.92	3.26	3.26	1	1
2022	9	9	3.41	4.41	3.41	3.41	1	1
2023	12	12	3.53	4.70	3.53	3.53	1	1
2024	15	15	3.60	3.98	3.60	3.60	1	1
2025	18	18	3.70	5.26	3.70	3.70	1	1
2026	21	21	3.77	5.49	3.77	3.77	1	1
2027	24	24	3.90	5.67	3.90	3.90	1	1
2028	27	27	4.00	5.83	4.00	4.00	1	1
2029	30	30	3.91	5.03	3.91	3.91	1	1



INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 22 Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 22 Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.085698
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.255463
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.479387
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.714839
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.779113
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.258500
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.552353
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.850556
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.156090
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.079549
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	11.211549
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	7.601523

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 22 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	2.1751	0.0857	0.0000	0.0000	0.0857	0.0857
2021	6.5252	0.2555	0.0000	0.0000	0.2555	0.2555
2022	10.8754	0.4794	0.0000	0.0000	0.4794	0.4794
2023	15.2255	0.7148	0.0000	0.0000	0.7148	0.7148
2024	19.5757	0.7791	0.0000	0.0000	0.7791	0.7791
2025	23.9259	1.2585	0.0000	0.0000	1.2585	1.2585
2026	28.2760	1.5524	0.0000	0.0000	1.5524	1.5524
2027	32.6262	1.8506	0.0000	0.0000	1.8506	1.8506
2028	36.9763	2.1561	0.0000	0.0000	2.1561	2.1561
2029	41.3265	2.0795	0.0000	0.0000	2.0795	2.0795
NOMINAL	217.5078	11.2115	0.0000	0.0000	11.2115	11.2115
NPV		7.6015	0.0000	0.0000	7.6015	7.6015

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Residential Efficient Electric Heat Pump SEER 22 Rebates

(1)	(2) UTILITY PROGRAM COSTS & REBATES						(9) PARTICIPATING CUSTOMER COSTS & BENEFITS											(18)
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	1.4029	0.0000	1.4029	2.7090	0.0000	2.7090	15.9470	0.0000	15.9470	2.0903	0.0628	0.1567	0.2195	0.0000	0.0000	0.0000	0.0000	
2021	1.4309	0.0000	1.4309	2.7090	0.0000	2.7090	16.2659	0.0000	16.2659	6.2708	0.2045	0.4796	0.6841	0.0000	0.0000	0.0000	0.0000	
2022	1.4596	0.0000	1.4596	2.7090	0.0000	2.7090	16.5913	0.0000	16.5913	10.4513	0.3563	0.8153	1.1716	0.0000	0.0000	0.0000	0.0000	
2023	1.4887	0.0000	1.4887	2.7090	0.0000	2.7090	16.9231	0.0000	16.9231	14.6318	0.5158	1.1642	1.6800	0.0000	0.0000	0.0000	0.0000	
2024	1.5185	0.0000	1.5185	2.7090	0.0000	2.7090	17.2615	0.0000	17.2615	18.8123	0.6765	1.5268	2.2033	0.0000	0.0000	0.0000	0.0000	
2025	1.5489	0.0000	1.5489	2.7090	0.0000	2.7090	17.6068	0.0000	17.6068	22.9928	0.8514	1.9034	2.7549	0.0000	0.0000	0.0000	0.0000	
2026	1.5799	0.0000	1.5799	2.7090	0.0000	2.7090	17.9589	0.0000	17.9589	27.1733	1.0237	2.2945	3.3182	0.0000	0.0000	0.0000	0.0000	
2027	1.6115	0.0000	1.6115	2.7090	0.0000	2.7090	18.3181	0.0000	18.3181	31.3538	1.2243	2.7004	3.9247	0.0000	0.0000	0.0000	0.0000	
2028	1.6437	0.0000	1.6437	2.7090	0.0000	2.7090	18.6845	0.0000	18.6845	35.5343	1.4208	3.1217	4.5426	0.0000	0.0000	0.0000	0.0000	
2029	1.6766	0.0000	1.6766	2.7090	0.0000	2.7090	19.0581	0.0000	19.0581	39.7148	1.5529	3.5588	5.1117	0.0000	0.0000	0.0000	0.0000	
NOMINAL	15.3612	0.0000	15.3612	27.0900	0.0000	27.0900	174.6152	0.0000	174.6152	209.0250	7.8891	17.7215	25.6106	0.0000	0.0000	0.0000	0.0000	
NPV	11.6408	0.0000	11.6408	20.7404	0.0000	20.7404	132.3245	0.0000	132.3245		5.3722	12.0813	17.4536		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 22 Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	1.403	15.947	0.000	17.350	0.000	0.000	0.086	0.000	0.086	(17.264)	(17.264)
2021	0.000	1.431	16.266	0.000	17.697	0.000	0.000	0.255	0.000	0.255	(17.441)	(33.641)
2022	0.000	1.460	16.591	0.000	18.051	0.000	0.000	0.479	0.000	0.479	(17.571)	(49.133)
2023	0.000	1.489	16.923	0.000	18.412	0.000	0.000	0.715	0.000	0.715	(17.697)	(63.784)
2024	0.000	1.519	17.262	0.000	18.780	0.000	0.000	0.779	0.000	0.779	(18.001)	(77.776)
2025	0.000	1.549	17.607	0.000	19.156	0.000	0.000	1.259	0.000	1.259	(17.897)	(90.839)
2026	0.000	1.580	17.959	0.000	19.539	0.000	0.000	1.552	0.000	1.552	(17.986)	(103.166)
2027	0.000	1.611	18.318	0.000	19.930	0.000	0.000	1.851	0.000	1.851	(18.079)	(114.800)
2028	0.000	1.644	18.684	0.000	20.328	0.000	0.000	2.156	0.000	2.156	(18.172)	(125.780)
2029	0.000	1.677	19.058	0.000	20.735	0.000	0.000	2.080	0.000	2.080	(18.655)	(136.364)
NOMINAL	0.000	15.361	174.615	0.000	189.976	0.000	0.000	11.212	0.000	11.212	(178.765)	
NPV	0.000	11.641	132.325	0.000	143.965	0.000	0.000	7.602	0.000	7.602	(136.364)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.05							

PARTICIPANT COSTS AND BENEFITS  
PROGRAM: Residential Efficient Electric Heat Pump SEER 22 Rebates

(1) YEAR	(2) SAVINGS IN PARTICIPANTS BILL \$(000)	(3) TAX CREDITS \$(000)	(4) UTILITY REBATES \$(000)	(5) OTHER BENEFITS \$(000)	(6) TOTAL BENEFITS \$(000)	(7) CUSTOMER EQUIPMENT COSTS \$(000)	(8) CUSTOMER O & M COSTS \$(000)	(9) OTHER COSTS \$(000)	(10) TOTAL COSTS \$(000)	(11) NET BENEFITS \$(000)	(12) CUMULATIVE DISCOUNTED NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED BENEFITS \$(000)	CUMULATIVE DISCOUNTED COSTS \$(000)	Benefit to Cost Ratio
2020	0.220	0.000	2.709	0.000	2.929	15.947	0.000	0.000	15.947	(13.018)	(13.018)	3	16	0.18
2021	0.684	0.000	2.709	0.000	3.393	16.266	0.000	0.000	16.266	(12.873)	(25.106)	6	31	0.20
2022	1.172	0.000	2.709	0.000	3.881	16.591	0.000	0.000	16.591	(12.711)	(36.312)	10	46	0.21
2023	1.680	0.000	2.709	0.000	4.389	16.923	0.000	0.000	16.923	(12.534)	(46.688)	13	60	0.22
2024	2.203	0.000	2.709	0.000	4.912	17.262	0.000	0.000	17.262	(12.349)	(56.288)	17	73	0.23
2025	2.755	0.000	2.709	0.000	5.464	17.607	0.000	0.000	17.607	(12.143)	(65.151)	21	86	0.24
2026	3.318	0.000	2.709	0.000	6.027	17.959	0.000	0.000	17.959	(11.932)	(73.328)	25	98	0.26
2027	3.925	0.000	2.709	0.000	6.634	18.318	0.000	0.000	18.318	(11.684)	(80.847)	29	110	0.27
2028	4.543	0.000	2.709	0.000	7.252	18.684	0.000	0.000	18.684	(11.433)	(87.755)	34	122	0.28
2029	5.112	0.000	2.709	0.000	7.821	19.058	0.000	0.000	19.058	(11.237)	(94.131)	38	132	0.29
NOMINAL	25.611	0.000	27.090	0.000	52.701	174.615	0.000	0.000	174.615	(121.915)				
NPV	17.454	0.000	20.740	0.000	38.194	132.325	0.000	0.000	132.325	(94.131)				
In-service year of generation unit:				2032										
Discount rate:				6.50%										
Benefit/Cost Ratio:				0.29										





PROGRAM: Residential New Home

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.73	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.76	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	1,252.2	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	1,203.4	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	403.8	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	2,984.3	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.50	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	421	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Residential New Home

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	116	116	3.00	3.94	3.00	3.00	1	1
2021	232	232	3.26	3.92	3.26	3.26	1	1
2022	348	348	3.41	4.41	3.41	3.41	1	1
2023	466	466	3.53	4.70	3.53	3.53	1	1
2024	585	585	3.60	3.98	3.60	3.60	1	1
2025	705	705	3.70	5.26	3.70	3.70	1	1
2026	825	825	3.77	5.49	3.77	3.77	1	1
2027	945	945	3.90	5.67	3.90	3.90	1	1
2028	1,063	1,063	4.00	5.83	4.00	4.00	1	1
2029	1,180	1,180	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential New Home

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1)	(1A)*	(2)	(2A)*	(3)	(4)	(5)	(6)	(6A)	(7)
Year	VALUE OF DEFERRAL FACTOR	AVOIDED GEN UNIT CAPACITY COST \$(000)	AVOIDED ANNUAL UNIT KWH GEN (000)	AVOIDED UNIT FIXED O&M COST \$(000)	AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	AVOIDED GEN UNIT FUEL COST \$(000)	REPLACEMENT FUEL COST \$(000)	AVOIDED PURCHASED CAPACITY COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential New Home

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.861515
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	8.530075
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	16.007055
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	23.927750
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	26.189526
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	42.483209
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	52.590298
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	62.856666
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	73.307533
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	70.666204
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	379.419832
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	257.035691

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential New Home

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	72.6273	2.8615	0.0000	0.0000	2.8615	2.8615
2021	217.8819	8.5301	0.0000	0.0000	8.5301	8.5301
2022	363.1365	16.0071	0.0000	0.0000	16.0071	16.0071
2023	509.6432	23.9277	0.0000	0.0000	23.9277	23.9277
2024	658.0283	26.1895	0.0000	0.0000	26.1895	26.1895
2025	807.6656	42.4832	0.0000	0.0000	42.4832	42.4832
2026	957.9289	52.5903	0.0000	0.0000	52.5903	52.5903
2027	1,108.1923	62.8567	0.0000	0.0000	62.8567	62.8567
2028	1,257.2035	73.3075	0.0000	0.0000	73.3075	73.3075
2029	1,404.3363	70.6662	0.0000	0.0000	70.6662	70.6662
NOMINAL	7,356.6437	379.4198	0.0000	0.0000	379.4198	379.4198
NPV		257.0357	0.0000	0.0000	257.0357	257.0357

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Residential New Home

(1)	(2)----- UTILITY PROGRAM COSTS & REBATES ----->						<----- PARTICIPATING CUSTOMER COSTS & BENEFITS ----->											(18)
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	46.8432	0.0000	46.8432	48.8253	0.0000	48.8253	346.1823	0.0000	346.1823	69.7948	2.0970	5.2332	7.3302	0.0000	0.0000	0.0000	0.0000	
2021	47.7800	0.0000	47.7800	48.8253	0.0000	48.8253	353.1060	0.0000	353.1060	209.3845	6.8294	16.0136	22.8430	0.0000	0.0000	0.0000	0.0000	
2022	48.7356	0.0000	48.7356	48.8253	0.0000	48.8253	360.1681	0.0000	360.1681	348.9741	11.8961	27.2232	39.1193	0.0000	0.0000	0.0000	0.0000	
2023	50.5674	0.0000	50.5674	49.6671	0.0000	49.6671	373.7055	0.0000	373.7055	489.7671	17.2643	38.9705	56.2348	0.0000	0.0000	0.0000	0.0000	
2024	52.0159	0.0000	52.0159	50.0880	0.0000	50.0880	384.4099	0.0000	384.4099	632.3652	22.7405	51.3232	74.0637	0.0000	0.0000	0.0000	0.0000	
2025	53.5020	0.0000	53.5020	50.5089	0.0000	50.5089	395.3930	0.0000	395.3930	776.1666	28.7420	64.2542	92.9962	0.0000	0.0000	0.0000	0.0000	
2026	54.5721	0.0000	54.5721	50.5089	0.0000	50.5089	403.3009	0.0000	403.3009	920.5697	34.6814	77.7326	112.4140	0.0000	0.0000	0.0000	0.0000	
2027	55.6635	0.0000	55.6635	50.5089	0.0000	50.5089	411.3669	0.0000	411.3669	1,064.9728	41.5842	91.7245	133.3086	0.0000	0.0000	0.0000	0.0000	
2028	55.8305	0.0000	55.8305	49.6671	0.0000	49.6671	412.6010	0.0000	412.6010	1,208.1725	48.3091	106.1392	154.4483	0.0000	0.0000	0.0000	0.0000	
2029	56.9471	0.0000	56.9471	49.6671	0.0000	49.6671	417.2865	0.0000	417.2865	1,349.5672	52.7708	120.9321	173.7028	0.0000	0.0000	0.0000	0.0000	
NOMINAL	522.4573	0.0000	522.4573	497.0916	0.0000	497.0916	3,857.5202	0.0000	3,857.5202	7,069.7346	266.9147	599.5462	866.4609	0.0000	0.0000	0.0000	0.0000	
NPV	395.2842	0.0000	395.2842	379.9420	0.0000	379.9420	2,919.2233	0.0000	2,919.2233		181.6026	408.3672	589.9698		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential New Home

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	46.843	346.182	0.000	393.025	0.000	0.000	2.862	0.000	2.862	(390.164)	(390.164)
2021	0.000	47.780	353.106	0.000	400.886	0.000	0.000	8.530	0.000	8.530	(392.356)	(758.573)
2022	0.000	48.736	360.168	0.000	408.904	0.000	0.000	16.007	0.000	16.007	(392.897)	(1,104.974)
2023	0.000	50.567	373.705	0.000	424.273	0.000	0.000	23.928	0.000	23.928	(400.345)	(1,436.400)
2024	0.000	52.016	384.410	0.000	436.426	0.000	0.000	26.190	0.000	26.190	(410.236)	(1,755.286)
2025	0.000	53.502	395.393	0.000	448.895	0.000	0.000	42.483	0.000	42.483	(406.412)	(2,051.918)
2026	0.000	54.572	403.301	0.000	457.873	0.000	0.000	52.590	0.000	52.590	(405.283)	(2,329.672)
2027	0.000	55.664	411.367	0.000	467.030	0.000	0.000	62.857	0.000	62.857	(404.174)	(2,589.760)
2028	0.000	55.831	412.601	0.000	468.432	0.000	0.000	73.308	0.000	73.308	(395.124)	(2,828.507)
2029	0.000	56.947	417.286	0.000	474.234	0.000	0.000	70.666	0.000	70.666	(403.567)	(3,057.472)
NOMINAL	0.000	522.457	3,857.520	0.000	4,379.977	0.000	0.000	379.420	0.000	379.420	(4,000.558)	
NPV	0.000	395.284	2,919.223	0.000	3,314.508	0.000	0.000	257.036	0.000	257.036	(3,057.472)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.08							





PROGRAM: Residential Heat Pump Water Heaters

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.34	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.35	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	1,804.4	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	1,734.0	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	581.89	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	2,139.0	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.5	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	500	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03

PROGRAM: Residential Heat Pump Water Heaters

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	182	182	3.00	3.94	3.00	3.00	1	1
2021	364	364	3.26	3.92	3.26	3.26	1	1
2022	546	546	3.41	4.41	3.41	3.41	1	1
2023	728	728	3.53	4.70	3.53	3.53	1	1
2024	910	910	3.60	3.98	3.60	3.60	1	1
2025	1,092	1,092	3.70	5.26	3.70	3.70	1	1
2026	1,274	1,274	3.77	5.49	3.77	3.77	1	1
2027	1,456	1,456	3.90	5.67	3.90	3.90	1	1
2028	1,638	1,638	4.00	5.83	4.00	4.00	1	1
2029	1,820	1,820	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%



AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Heat Pump Water Heaters

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Heat Pump Water Heaters

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	6.469390
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	19.285021
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	36.189175
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	53.963578
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	58.815620
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	95.004795
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	117.187906
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	139.699412
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	162.764265
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	156.986147
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	846.365310
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	573.842684

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Residential Heat Pump Water Heaters

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	164.1977	6.4694	0.0000	0.0000	6.4694	6.4694
2021	492.5931	19.2850	0.0000	0.0000	19.2850	19.2850
2022	820.9886	36.1892	0.0000	0.0000	36.1892	36.1892
2023	1,149.3840	53.9636	0.0000	0.0000	53.9636	53.9636
2024	1,477.7794	58.8156	0.0000	0.0000	58.8156	58.8156
2025	1,806.1748	95.0048	0.0000	0.0000	95.0048	95.0048
2026	2,134.5702	117.1879	0.0000	0.0000	117.1879	117.1879
2027	2,462.9657	139.6994	0.0000	0.0000	139.6994	139.6994
2028	2,791.3611	162.7643	0.0000	0.0000	162.7643	162.7643
2029	3,119.7565	156.9861	0.0000	0.0000	156.9861	156.9861
NOMINAL	16,419.7711	846.3653	0.0000	0.0000	846.3653	846.3653
NPV		573.8427	0.0000	0.0000	573.8427	573.8427

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN

PROGRAM: Residential Heat Pump Water Heaters

(1)	(2) UTILITY PROGRAM COSTS & REBATES					(3) PARTICIPATING CUSTOMER COSTS & BENEFITS												(18)
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	105.9043	0.0000	105.9043	91.0000	0.0000	91.0000	389.2980	0.0000	389.2980	157.7940	4.7409	11.8314	16.5723	0.0000	0.0000	0.0000	0.0000	
2021	108.0223	0.0000	108.0223	91.0000	0.0000	91.0000	397.0840	0.0000	397.0840	473.3820	15.4400	36.2041	51.6441	0.0000	0.0000	0.0000	0.0000	
2022	110.1828	0.0000	110.1828	91.0000	0.0000	91.0000	405.0256	0.0000	405.0256	788.9700	26.8951	61.5469	88.4420	0.0000	0.0000	0.0000	0.0000	
2023	112.3864	0.0000	112.3864	91.0000	0.0000	91.0000	413.1262	0.0000	413.1262	1,104.5580	38.9357	87.8890	126.8247	0.0000	0.0000	0.0000	0.0000	
2024	114.6342	0.0000	114.6342	91.0000	0.0000	91.0000	421.3887	0.0000	421.3887	1,420.1460	51.0699	115.2601	166.3300	0.0000	0.0000	0.0000	0.0000	
2025	116.9269	0.0000	116.9269	91.0000	0.0000	91.0000	429.8164	0.0000	429.8164	1,735.7340	64.2755	143.6910	207.9664	0.0000	0.0000	0.0000	0.0000	
2026	119.2654	0.0000	119.2654	91.0000	0.0000	91.0000	438.4128	0.0000	438.4128	2,051.3220	77.2811	173.2129	250.4940	0.0000	0.0000	0.0000	0.0000	
2027	121.6507	0.0000	121.6507	91.0000	0.0000	91.0000	447.1810	0.0000	447.1810	2,366.9100	92.4211	203.8583	296.2794	0.0000	0.0000	0.0000	0.0000	
2028	124.0837	0.0000	124.0837	91.0000	0.0000	91.0000	456.1247	0.0000	456.1247	2,682.4980	107.2605	235.6602	342.9207	0.0000	0.0000	0.0000	0.0000	
2029	126.5654	0.0000	126.5654	91.0000	0.0000	91.0000	465.2471	0.0000	465.2471	2,998.0860	117.2311	268.6526	385.8837	0.0000	0.0000	0.0000	0.0000	
NOMINAL	1,159.6220	0.0000	1,159.6220	910.0000	0.0000	910.0000	4,262.7045	0.0000	4,262.7045	15,779.4000	595.5509	1,337.8065	1,933.3574	0.0000	0.0000	0.0000	0.0000	
NPV	878.7690	0.0000	878.7690	696.7055	0.0000	696.7055	3,230.3047	0.0000	3,230.3047		405.5536	912.0267	1,317.5802		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Heat Pump Water Heaters

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	105.904	389.298	0.000	495.202	0.000	0.000	6.469	0.000	6.469	(488.733)	(488.733)
2021	0.000	108.022	397.084	0.000	505.106	0.000	0.000	19.285	0.000	19.285	(485.821)	(944.903)
2022	0.000	110.183	405.026	0.000	515.208	0.000	0.000	36.189	0.000	36.189	(479.019)	(1,367.235)
2023	0.000	112.386	413.126	0.000	525.513	0.000	0.000	53.964	0.000	53.964	(471.549)	(1,757.606)
2024	0.000	114.634	421.389	0.000	536.023	0.000	0.000	58.816	0.000	58.816	(477.207)	(2,128.550)
2025	0.000	116.927	429.816	0.000	546.743	0.000	0.000	95.005	0.000	95.005	(451.739)	(2,458.266)
2026	0.000	119.265	438.413	0.000	557.678	0.000	0.000	117.188	0.000	117.188	(440.490)	(2,760.149)
2027	0.000	121.651	447.181	0.000	568.832	0.000	0.000	139.699	0.000	139.699	(429.132)	(3,036.298)
2028	0.000	124.084	456.125	0.000	580.208	0.000	0.000	162.764	0.000	162.764	(417.444)	(3,288.531)
2029	0.000	126.565	465.247	0.000	591.813	0.000	0.000	156.986	0.000	156.986	(434.826)	(3,535.231)
NOMINAL	0.000	1,159.622	4,262.704	0.000	5,422.327	0.000	0.000	846.365	0.000	846.365	(4,575.961)	
NPV	0.000	878.769	3,230.305	0.000	4,109.074	0.000	0.000	573.843	0.000	573.843	(3,535.231)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.14							





PROGRAM: Residential Efficiency Delivered

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.26	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.27	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	824.3	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	792.2	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	265.84	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	785.5	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.50	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	668	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.498	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03



INPUT DATA -- PART 2

PROGRAM: Residential Efficiency Delivered

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	73	73	3.00	3.94	3.00	3.00	1	1
2021	146	146	3.26	3.92	3.26	3.26	1	1
2022	219	219	3.41	4.41	3.41	3.41	1	1
2023	292	292	3.53	4.70	3.53	3.53	1	1
2024	365	365	3.60	3.98	3.60	3.60	1	1
2025	438	438	3.70	5.26	3.70	3.70	1	1
2026	511	511	3.77	5.49	3.77	3.77	1	1
2027	584	584	3.90	5.67	3.90	3.90	1	1
2028	657	657	4.00	5.83	4.00	4.00	1	1
2029	730	730	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
 PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
 PLANT COSTS (2020 \$) \$96.84  
 AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Residential Efficiency Delivered

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1)	(1A)*	(2)	(2A)*	(3)	(4)	(5)	(6)	(6A)	(7)
Year	VALUE OF DEFERRAL FACTOR	AVOIDED GEN UNIT CAPACITY COST \$(000)	AVOIDED ANNUAL UNIT KWH GEN (000)	AVOIDED UNIT FIXED O&M COST \$(000)	AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	AVOIDED GEN UNIT FUEL COST \$(000)	REPLACEMENT FUEL COST \$(000)	AVOIDED PURCHASED CAPACITY COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Residential Efficiency Delivered

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.185488
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.533898
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	6.631513
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	9.888596
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	10.777712
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	17.409225
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	21.474186
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	25.599323
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	29.825859
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	28.767044
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	155.092844
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	105.154232

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

## \* WORKSHEET : DSM PROGRAM FUEL SAVINGS

PROGRAM: Residential Efficiency Delivered

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	30.0885	1.1855	0.0000	0.0000	1.1855	1.1855
2021	90.2656	3.5339	0.0000	0.0000	3.5339	3.5339
2022	150.4427	6.6315	0.0000	0.0000	6.6315	6.6315
2023	210.6197	9.8886	0.0000	0.0000	9.8886	9.8886
2024	270.7968	10.7777	0.0000	0.0000	10.7777	10.7777
2025	330.9739	17.4092	0.0000	0.0000	17.4092	17.4092
2026	391.1509	21.4742	0.0000	0.0000	21.4742	21.4742
2027	451.3280	25.5993	0.0000	0.0000	25.5993	25.5993
2028	511.5050	29.8259	0.0000	0.0000	29.8259	29.8259
2029	571.6821	28.7670	0.0000	0.0000	28.7670	28.7670
NOMINAL	3,008.8532	155.0928	0.0000	0.0000	155.0928	155.0928
NPV		105.1542	0.0000	0.0000	105.1542	105.1542

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN

PROGRAM: Residential Efficiency Delivered

(1)	(2) UTILITY PROGRAM COSTS & REBATES						(3) PARTICIPATING CUSTOMER COSTS & BENEFITS											(18)
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	19.4065	0.0000	19.4065	48.7398	0.0000	48.7398	57.3410	0.0000	57.3410	28.9151	0.8688	2.1681	3.0368	0.0000	0.0000	0.0000	0.0000	
2021	19.7946	0.0000	19.7946	48.7398	0.0000	48.7398	58.4878	0.0000	58.4878	86.7452	2.8293	6.6342	9.4636	0.0000	0.0000	0.0000	0.0000	
2022	20.1905	0.0000	20.1905	48.7398	0.0000	48.7398	59.6575	0.0000	59.6575	144.5754	4.9284	11.2782	16.2066	0.0000	0.0000	0.0000	0.0000	
2023	20.5943	0.0000	20.5943	48.7398	0.0000	48.7398	60.8507	0.0000	60.8507	202.4056	7.1348	16.1053	23.2401	0.0000	0.0000	0.0000	0.0000	
2024	21.0062	0.0000	21.0062	48.7398	0.0000	48.7398	62.0677	0.0000	62.0677	260.2357	9.3583	21.1209	30.4793	0.0000	0.0000	0.0000	0.0000	
2025	21.4263	0.0000	21.4263	48.7398	0.0000	48.7398	63.3090	0.0000	63.3090	318.0659	11.7782	26.3308	38.1090	0.0000	0.0000	0.0000	0.0000	
2026	21.8549	0.0000	21.8549	48.7398	0.0000	48.7398	64.5752	0.0000	64.5752	375.8960	14.1614	31.7405	45.9020	0.0000	0.0000	0.0000	0.0000	
2027	22.2920	0.0000	22.2920	48.7398	0.0000	48.7398	65.8667	0.0000	65.8667	433.7262	16.9358	37.3562	54.2919	0.0000	0.0000	0.0000	0.0000	
2028	22.7378	0.0000	22.7378	48.7398	0.0000	48.7398	67.1841	0.0000	67.1841	491.5564	19.6550	43.1837	62.8388	0.0000	0.0000	0.0000	0.0000	
2029	23.1926	0.0000	23.1926	48.7398	0.0000	48.7398	68.5277	0.0000	68.5277	549.3865	21.4821	49.2294	70.7116	0.0000	0.0000	0.0000	0.0000	
NOMINAL	212.4958	0.0000	212.4958	487.3981	0.0000	487.3981	627.8675	0.0000	627.8675	2,891.5080	109.1322	245.1473	354.2795	0.0000	0.0000	0.0000	0.0000	
NPV	161.0307	0.0000	161.0307	373.1571	0.0000	373.1571	475.8020	0.0000	475.8020		74.3160	167.1250	241.4410		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Residential Efficiency Delivered

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	19.407	57.341	0.000	76.747	0.000	0.000	1.185	0.000	1.185	(75.562)	(75.562)
2021	0.000	19.795	58.488	0.000	78.282	0.000	0.000	3.534	0.000	3.534	(74.749)	(145.748)
2022	0.000	20.191	59.658	0.000	79.848	0.000	0.000	6.632	0.000	6.632	(73.217)	(210.300)
2023	0.000	20.594	60.851	0.000	81.445	0.000	0.000	9.889	0.000	9.889	(71.556)	(269.538)
2024	0.000	21.006	62.068	0.000	83.074	0.000	0.000	10.778	0.000	10.778	(72.296)	(325.736)
2025	0.000	21.426	63.309	0.000	84.735	0.000	0.000	17.409	0.000	17.409	(67.326)	(374.876)
2026	0.000	21.855	64.575	0.000	86.430	0.000	0.000	21.474	0.000	21.474	(64.956)	(419.392)
2027	0.000	22.292	65.867	0.000	88.159	0.000	0.000	25.599	0.000	25.599	(62.559)	(459.650)
2028	0.000	22.738	67.184	0.000	89.922	0.000	0.000	29.826	0.000	29.826	(60.096)	(495.962)
2029	0.000	23.193	68.528	0.000	91.720	0.000	0.000	28.767	0.000	28.767	(62.953)	(531.678)
NOMINAL	0.000	212.496	627.867	0.000	840.363	0.000	0.000	155.093	0.000	155.093	(685.270)	
NPV	0.000	161.031	475.802	0.000	636.833	0.000	0.000	105.154	0.000	105.154	(531.678)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.17							







PROGRAM: Commercial Efficient Electric Heat Pump SEER 15

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.15 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.16 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	262.2 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	252.0 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	6.6 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	474.0 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.50 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	102 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.016 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Efficient Electric Heat Pump SEER 15

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	3	3	3.00	3.94	3.00	3.00	1	1
2021	6	6	3.26	3.92	3.26	3.26	1	1
2022	9	9	3.41	4.41	3.41	3.41	1	1
2023	11	11	3.53	4.70	3.53	3.53	1	1
2024	13	13	3.60	3.98	3.60	3.60	1	1
2025	15	15	3.70	5.26	3.70	3.70	1	1
2026	17	17	3.77	5.49	3.77	3.77	1	1
2027	19	19	3.90	5.67	3.90	3.90	1	1
2028	21	21	4.00	5.83	4.00	4.00	1	1
2029	23	23	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 15

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 15

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.015498
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.046198
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.086692
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.123116
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.125240
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.193104
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.230340
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.267723
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.305809
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.290296
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.684014
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.155145

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



## \* WORKSHEET : DSM PROGRAM FUEL SAVINGS

PROGRAM: Commercial Efficient Electric Heat Pump SEER 15

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	0.3933	0.0155	0.0000	0.0000	0.0155	0.0155
2021	1.1800	0.0462	0.0000	0.0000	0.0462	0.0462
2022	1.9667	0.0867	0.0000	0.0000	0.0867	0.0867
2023	2.6223	0.1231	0.0000	0.0000	0.1231	0.1231
2024	3.1467	0.1252	0.0000	0.0000	0.1252	0.1252
2025	3.6712	0.1931	0.0000	0.0000	0.1931	0.1931
2026	4.1956	0.2303	0.0000	0.0000	0.2303	0.2303
2027	4.7201	0.2677	0.0000	0.0000	0.2677	0.2677
2028	5.2445	0.3058	0.0000	0.0000	0.3058	0.3058
2029	5.7690	0.2903	0.0000	0.0000	0.2903	0.2903
NOMINAL	32.9095	1.6840	0.0000	0.0000	1.6840	1.6840
NPV		1.1551	0.0000	0.0000	1.1551	1.1551

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Commercial Efficient Electric Heat Pump SEER 15

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES ----->							<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	0.0197	0.0000	0.0197	0.3060	0.0000	0.3060	1.4220	0.0000	1.4220	0.3780	0.0114	0.0265	0.0379	0.0000	0.0000	0.0000	0.0000
2021	0.0201	0.0000	0.0201	0.3060	0.0000	0.3060	1.4504	0.0000	1.4504	1.1340	0.0370	0.0812	0.1181	0.0000	0.0000	0.0000	0.0000
2022	0.0205	0.0000	0.0205	0.3060	0.0000	0.3060	1.4794	0.0000	1.4794	1.8900	0.0644	0.1380	0.2024	0.0000	0.0000	0.0000	0.0000
2023	0.0139	0.0000	0.0139	0.2040	0.0000	0.2040	1.0060	0.0000	1.0060	2.5200	0.0888	0.1876	0.2765	0.0000	0.0000	0.0000	0.0000
2024	0.0142	0.0000	0.0142	0.2040	0.0000	0.2040	1.0261	0.0000	1.0261	3.0240	0.1087	0.2297	0.3384	0.0000	0.0000	0.0000	0.0000
2025	0.0145	0.0000	0.0145	0.2040	0.0000	0.2040	1.0467	0.0000	1.0467	3.5280	0.1306	0.2733	0.4039	0.0000	0.0000	0.0000	0.0000
2026	0.0148	0.0000	0.0148	0.2040	0.0000	0.2040	1.0676	0.0000	1.0676	4.0320	0.1519	0.3186	0.4705	0.0000	0.0000	0.0000	0.0000
2027	0.0151	0.0000	0.0151	0.2040	0.0000	0.2040	1.0890	0.0000	1.0890	4.5360	0.1771	0.3656	0.5427	0.0000	0.0000	0.0000	0.0000
2028	0.0154	0.0000	0.0154	0.2040	0.0000	0.2040	1.1107	0.0000	1.1107	5.0400	0.2015	0.4143	0.6158	0.0000	0.0000	0.0000	0.0000
2029	0.0157	0.0000	0.0157	0.2040	0.0000	0.2040	1.1329	0.0000	1.1329	5.5440	0.2168	0.4649	0.6816	0.0000	0.0000	0.0000	0.0000
NOMINAL	0.1637	0.0000	0.1637	2.3460	0.0000	2.3460	11.8310	0.0000	11.8310	31.6260	1.1883	2.4995	3.6878	0.0000	0.0000	0.0000	0.0000
NPV	0.1277	0.0000	0.1277	1.8495	0.0000	1.8495	9.2290	0.0000	9.2290		0.8192	1.7253	2.5445		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 15

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	0.020	1.422	0.000	1.442	0.000	0.000	0.015	0.000	0.015	(1.426)	(1.426)
2021	0.000	0.020	1.450	0.000	1.471	0.000	0.000	0.046	0.000	0.046	(1.424)	(2.764)
2022	0.000	0.020	1.479	0.000	1.500	0.000	0.000	0.087	0.000	0.087	(1.413)	(4.010)
2023	0.000	0.014	1.006	0.000	1.020	0.000	0.000	0.123	0.000	0.123	(0.897)	(4.752)
2024	0.000	0.014	1.026	0.000	1.040	0.000	0.000	0.125	0.000	0.125	(0.915)	(5.463)
2025	0.000	0.014	1.047	0.000	1.061	0.000	0.000	0.193	0.000	0.193	(0.868)	(6.097)
2026	0.000	0.015	1.068	0.000	1.082	0.000	0.000	0.230	0.000	0.230	(0.852)	(6.681)
2027	0.000	0.015	1.089	0.000	1.104	0.000	0.000	0.268	0.000	0.268	(0.836)	(7.219)
2028	0.000	0.015	1.111	0.000	1.126	0.000	0.000	0.306	0.000	0.306	(0.820)	(7.715)
2029	0.000	0.016	1.133	0.000	1.149	0.000	0.000	0.290	0.000	0.290	(0.858)	(8.202)
NOMINAL	0.000	0.164	11.831	0.000	11.995	0.000	0.000	1.684	0.000	1.684	(10.311)	
NPV	0.000	0.128	9.229	0.000	9.357	0.000	0.000	1.155	0.000	1.155	(8.202)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.12							





PROGRAM: Commercial Efficient Electric Heat Pump SEER 16

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.27	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.28	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	490.1	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	471.0	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	12.26	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	1,385.0	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.5	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	252.0	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.016	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Efficient Electric Heat Pump SEER 16

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	2	2	3.00	3.94	3.00	3.00	1	1
2021	4	4	3.26	3.92	3.26	3.26	1	1
2022	5	5	3.41	4.41	3.41	3.41	1	1
2023	6	6	3.53	4.70	3.53	3.53	1	1
2024	7	7	3.60	3.98	3.60	3.60	1	1
2025	8	8	3.70	5.26	3.70	3.70	1	1
2026	9	9	3.77	5.49	3.77	3.77	1	1
2027	10	10	3.90	5.67	3.90	3.90	1	1
2028	11	11	4.00	5.83	4.00	4.00	1	1
2029	12	12	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

Commercial Efficient Electric Heat Pump SEER 16

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0



CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS

Commercial Efficient Electric Heat Pump SEER 16 Commercial Efficient Electric Heat Pump SEER 16

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1)	(1A)*	(2)	(2A)*	(3)	(4)	(5)	(6)	(6A)	(7)
Year	VALUE OF DEFERRAL FACTOR	AVOIDED GEN UNIT CAPACITY COST \$(000)	AVOIDED ANNUAL UNIT KWH GEN (000)	AVOIDED UNIT FIXED O&M COST \$(000)	AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	AVOIDED GEN UNIT FUEL COST \$(000)	REPLACEMENT FUEL COST \$(000)	AVOIDED PURCHASED CAPACITY COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 16

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.019311
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.057564
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.097219
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.126560
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.126793
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.193350
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.228712
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.264093
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.300075
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.283619
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.697296
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.172446

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

## \* WORKSHEET : DSM PROGRAM FUEL SAVINGS

Commercial Efficient Electric Heat Pump SEER 16 Commercial Efficient Electric Heat Pump SEER 16

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	0.4901	0.0193	0.0000	0.0000	0.0193	0.0193
2021	1.4703	0.0576	0.0000	0.0000	0.0576	0.0576
2022	2.2055	0.0972	0.0000	0.0000	0.0972	0.0972
2023	2.6956	0.1266	0.0000	0.0000	0.1266	0.1266
2024	3.1857	0.1268	0.0000	0.0000	0.1268	0.1268
2025	3.6759	0.1934	0.0000	0.0000	0.1934	0.1934
2026	4.1660	0.2287	0.0000	0.0000	0.2287	0.2287
2027	4.6561	0.2641	0.0000	0.0000	0.2641	0.2641
2028	5.1462	0.3001	0.0000	0.0000	0.3001	0.3001
2029	5.6363	0.2836	0.0000	0.0000	0.2836	0.2836
NOMINAL	33.3278	1.6973	0.0000	0.0000	1.6973	1.6973
NPV		1.1724	0.0000	0.0000	1.1724	1.1724

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 Commercial E PROGRAM: Commercial Efficient Electric Heat Pump SEER 16

(1)	(2)----- UTILITY PROGRAM COSTS & REBATES ----->						<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->											(18)
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	0.0245	0.0000	0.0245	0.5040	0.0000	0.5040	2.7700	0.0000	2.7700	0.4710	0.0142	0.0330	0.0472	0.0000	0.0000	0.0000	0.0000	
2021	0.0250	0.0000	0.0250	0.5040	0.0000	0.5040	2.8254	0.0000	2.8254	1.4130	0.0461	0.1011	0.1472	0.0000	0.0000	0.0000	0.0000	
2022	0.0128	0.0000	0.0128	0.2520	0.0000	0.2520	1.4410	0.0000	1.4410	2.1195	0.0723	0.1547	0.2270	0.0000	0.0000	0.0000	0.0000	
2023	0.0130	0.0000	0.0130	0.2520	0.0000	0.2520	1.4698	0.0000	1.4698	2.5905	0.0913	0.1929	0.2842	0.0000	0.0000	0.0000	0.0000	
2024	0.0133	0.0000	0.0133	0.2520	0.0000	0.2520	1.4992	0.0000	1.4992	3.0615	0.1101	0.2325	0.3426	0.0000	0.0000	0.0000	0.0000	
2025	0.0135	0.0000	0.0135	0.2520	0.0000	0.2520	1.5292	0.0000	1.5292	3.5325	0.1308	0.2736	0.4044	0.0000	0.0000	0.0000	0.0000	
2026	0.0138	0.0000	0.0138	0.2520	0.0000	0.2520	1.5597	0.0000	1.5597	4.0035	0.1508	0.3163	0.4671	0.0000	0.0000	0.0000	0.0000	
2027	0.0141	0.0000	0.0141	0.2520	0.0000	0.2520	1.5909	0.0000	1.5909	4.4745	0.1747	0.3606	0.5353	0.0000	0.0000	0.0000	0.0000	
2028	0.0144	0.0000	0.0144	0.2520	0.0000	0.2520	1.6227	0.0000	1.6227	4.9455	0.1977	0.4065	0.6043	0.0000	0.0000	0.0000	0.0000	
2029	0.0146	0.0000	0.0146	0.2520	0.0000	0.2520	1.6552	0.0000	1.6552	5.4165	0.2118	0.4542	0.6660	0.0000	0.0000	0.0000	0.0000	
NOMINAL	0.1590	0.0000	0.1590	3.0240	0.0000	3.0240	17.9631	0.0000	17.9631	32.0280	1.1998	2.5255	3.7253	0.0000	0.0000	0.0000	0.0000	
NPV	0.1257	0.0000	0.1257	2.4180	0.0000	2.4180	14.2039	0.0000	14.2039		0.8332	1.7567	2.5899		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
Commercial Effic PROGRAM: Commercial Efficient Electric Heat Pump SEER 16

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	0.025	2.770	0.000	2.795	0.000	0.000	0.019	0.000	0.019	(2.775)	(2.775)
2021	0.000	0.025	2.825	0.000	2.850	0.000	0.000	0.058	0.000	0.058	(2.793)	(5.398)
2022	0.000	0.013	1.441	0.000	1.454	0.000	0.000	0.097	0.000	0.097	(1.356)	(6.594)
2023	0.000	0.013	1.470	0.000	1.483	0.000	0.000	0.127	0.000	0.127	(1.356)	(7.716)
2024	0.000	0.013	1.499	0.000	1.512	0.000	0.000	0.127	0.000	0.127	(1.386)	(8.793)
2025	0.000	0.014	1.529	0.000	1.543	0.000	0.000	0.193	0.000	0.193	(1.349)	(9.778)
2026	0.000	0.014	1.560	0.000	1.574	0.000	0.000	0.229	0.000	0.229	(1.345)	(10.700)
2027	0.000	0.014	1.591	0.000	1.605	0.000	0.000	0.264	0.000	0.264	(1.341)	(11.563)
2028	0.000	0.014	1.623	0.000	1.637	0.000	0.000	0.300	0.000	0.300	(1.337)	(12.371)
2029	0.000	0.015	1.655	0.000	1.670	0.000	0.000	0.284	0.000	0.284	(1.386)	(13.157)
NOMINAL	0.000	0.159	17.963	0.000	18.122	0.000	0.000	1.697	0.000	1.697	(16.425)	
NPV	0.000	0.126	14.204	0.000	14.330	0.000	0.000	1.172	0.000	1.172	(13.157)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.08							







PROGRAM: Commercial Efficient Electric Heat Pump SEER 17

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.39	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.41	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	683.7	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	657.0	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	17.1	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	2,250.0	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.5	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	384.0	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.016	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Efficient Electric Heat Pump SEER 17

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	1	1	3.00	3.94	3.00	3.00	1	1
2021	2	2	3.26	3.92	3.26	3.26	1	1
2022	3	3	3.41	4.41	3.41	3.41	1	1
2023	4	4	3.53	4.70	3.53	3.53	1	1
2024	5	5	3.60	3.98	3.60	3.60	1	1
2025	6	6	3.70	5.26	3.70	3.70	1	1
2026	6	6	3.77	5.49	3.77	3.77	1	1
2027	6	6	3.90	5.67	3.90	3.90	1	1
2028	6	6	4.00	5.83	4.00	4.00	1	1
2029	7	7	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 17

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 17

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.013468
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.040148
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.075340
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.112343
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.122444
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.197784
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.225199
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.232664
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.239186
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.223612
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.482188
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.025578

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 17

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	0.3418	0.0135	0.0000	0.0000	0.0135	0.0135
2021	1.0255	0.0401	0.0000	0.0000	0.0401	0.0401
2022	1.7092	0.0753	0.0000	0.0000	0.0753	0.0753
2023	2.3928	0.1123	0.0000	0.0000	0.1123	0.1123
2024	3.0765	0.1224	0.0000	0.0000	0.1224	0.1224
2025	3.7601	0.1978	0.0000	0.0000	0.1978	0.1978
2026	4.1020	0.2252	0.0000	0.0000	0.2252	0.2252
2027	4.1020	0.2327	0.0000	0.0000	0.2327	0.2327
2028	4.1020	0.2392	0.0000	0.0000	0.2392	0.2392
2029	4.4438	0.2236	0.0000	0.0000	0.2236	0.2236
NOMINAL	29.0557	1.4822	0.0000	0.0000	1.4822	1.4822
NPV		1.0256	0.0000	0.0000	1.0256	1.0256

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Commercial Efficient Electric Heat Pump SEER 17

(1)	(2)----- UTILITY PROGRAM COSTS & REBATES ----->						<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->											(18)
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	0.0171	0.0000	0.0171	0.3840	0.0000	0.3840	2.2500	0.0000	2.2500	0.3285	0.0099	0.0230	0.0329	0.0000	0.0000	0.0000	0.0000	
2021	0.0174	0.0000	0.0174	0.3840	0.0000	0.3840	2.2950	0.0000	2.2950	0.9855	0.0321	0.0705	0.1027	0.0000	0.0000	0.0000	0.0000	
2022	0.0178	0.0000	0.0178	0.3840	0.0000	0.3840	2.3409	0.0000	2.3409	1.6425	0.0560	0.1199	0.1759	0.0000	0.0000	0.0000	0.0000	
2023	0.0181	0.0000	0.0181	0.3840	0.0000	0.3840	2.3877	0.0000	2.3877	2.2995	0.0811	0.1712	0.2523	0.0000	0.0000	0.0000	0.0000	
2024	0.0185	0.0000	0.0185	0.3840	0.0000	0.3840	2.4355	0.0000	2.4355	2.9565	0.1063	0.2245	0.3308	0.0000	0.0000	0.0000	0.0000	
2025	0.0189	0.0000	0.0189	0.3840	0.0000	0.3840	2.4842	0.0000	2.4842	3.6135	0.1338	0.2799	0.4137	0.0000	0.0000	0.0000	0.0000	
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.9420	0.1485	0.3115	0.4600	0.0000	0.0000	0.0000	0.0000	
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.9420	0.1539	0.3177	0.4716	0.0000	0.0000	0.0000	0.0000	
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.9420	0.1576	0.3240	0.4817	0.0000	0.0000	0.0000	0.0000	
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.6890	0.0000	2.6890	4.2705	0.1670	0.3581	0.5251	0.0000	0.0000	0.0000	0.0000	
NOMINAL	0.1078	0.0000	0.1078	2.3040	0.0000	2.3040	16.8822	0.0000	16.8822	27.9225	1.0462	2.2004	3.2466	0.0000	0.0000	0.0000	0.0000	
NPV	0.0923	0.0000	0.0923	1.9798	0.0000	1.9798	13.6774	0.0000	13.6774		0.7276	1.5324	2.2600		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 17

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	0.017	2.250	0.000	2.267	0.000	0.000	0.013	0.000	0.013	(2.254)	(2.254)
2021	0.000	0.017	2.295	0.000	2.312	0.000	0.000	0.040	0.000	0.040	(2.272)	(4.387)
2022	0.000	0.018	2.341	0.000	2.359	0.000	0.000	0.075	0.000	0.075	(2.283)	(6.400)
2023	0.000	0.018	2.388	0.000	2.406	0.000	0.000	0.112	0.000	0.112	(2.294)	(8.299)
2024	0.000	0.019	2.435	0.000	2.454	0.000	0.000	0.122	0.000	0.122	(2.332)	(10.111)
2025	0.000	0.019	2.484	0.000	2.503	0.000	0.000	0.198	0.000	0.198	(2.305)	(11.794)
2026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.000	0.225	0.225	(11.640)
2027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.233	0.000	0.233	0.233	(11.490)
2028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.239	0.000	0.239	0.239	(11.345)
2029	0.000	0.000	2.689	0.000	2.689	0.000	0.000	0.224	0.000	0.224	(2.465)	(12.744)
NOMINAL	0.000	0.108	16.882	0.000	16.990	0.000	0.000	1.482	0.000	1.482	(15.508)	
NPV	0.000	0.092	13.677	0.000	13.770	0.000	0.000	1.026	0.000	1.026	(12.744)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.07							





PROGRAM: Commercial Efficient Electric Heat Pump SEER 18

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.48	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.50	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	861.6	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	828.0	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	21.5	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	3,013.0	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.5	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	501.0	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.016	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Efficient Electric Heat Pump SEER 18

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	1	1	3.00	3.94	3.00	3.00	1	1
2021	2	2	3.26	3.92	3.26	3.26	1	1
2022	3	3	3.41	4.41	3.41	3.41	1	1
2023	4	4	3.53	4.70	3.53	3.53	1	1
2024	5	5	3.60	3.98	3.60	3.60	1	1
2025	6	6	3.70	5.26	3.70	3.70	1	1
2026	6	6	3.77	5.49	3.77	3.77	1	1
2027	6	6	3.90	5.67	3.90	3.90	1	1
2028	6	6	4.00	5.83	4.00	4.00	1	1
2029	7	7	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 18

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 18

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.016974
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.050598
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.094949
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.141583
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.154313
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.249262
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.283812
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.293221
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.301440
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.281813
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.867963
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.292509

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 18

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	0.4308	0.0170	0.0000	0.0000	0.0170	0.0170
2021	1.2924	0.0506	0.0000	0.0000	0.0506	0.0506
2022	2.1540	0.0949	0.0000	0.0000	0.0949	0.0949
2023	3.0156	0.1416	0.0000	0.0000	0.1416	0.1416
2024	3.8772	0.1543	0.0000	0.0000	0.1543	0.1543
2025	4.7388	0.2493	0.0000	0.0000	0.2493	0.2493
2026	5.1696	0.2838	0.0000	0.0000	0.2838	0.2838
2027	5.1696	0.2932	0.0000	0.0000	0.2932	0.2932
2028	5.1696	0.3014	0.0000	0.0000	0.3014	0.3014
2029	5.6004	0.2818	0.0000	0.0000	0.2818	0.2818
NOMINAL	36.6181	1.8680	0.0000	0.0000	1.8680	1.8680
NPV		1.2925	0.0000	0.0000	1.2925	1.2925

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 18

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES -----							----- PARTICIPATING CUSTOMER COSTS & BENEFITS -----										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	0.0215	0.0000	0.0215	0.5010	0.0000	0.5010	3.0130	0.0000	3.0130	0.4140	0.0124	0.0290	0.0415	0.0000	0.0000	0.0000	0.0000
2021	0.0220	0.0000	0.0220	0.5010	0.0000	0.5010	3.0733	0.0000	3.0733	1.2420	0.0405	0.0889	0.1294	0.0000	0.0000	0.0000	0.0000
2022	0.0224	0.0000	0.0224	0.5010	0.0000	0.5010	3.1347	0.0000	3.1347	2.0700	0.0706	0.1511	0.2217	0.0000	0.0000	0.0000	0.0000
2023	0.0229	0.0000	0.0229	0.5010	0.0000	0.5010	3.1974	0.0000	3.1974	2.8980	0.1022	0.2158	0.3179	0.0000	0.0000	0.0000	0.0000
2024	0.0233	0.0000	0.0233	0.5010	0.0000	0.5010	3.2614	0.0000	3.2614	3.7260	0.1340	0.2830	0.4170	0.0000	0.0000	0.0000	0.0000
2025	0.0238	0.0000	0.0238	0.5010	0.0000	0.5010	3.3266	0.0000	3.3266	4.5540	0.1686	0.3528	0.5214	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	4.9680	0.1872	0.3925	0.5797	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	4.9680	0.1940	0.4004	0.5944	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	4.9680	0.1986	0.4084	0.6070	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.6008	0.0000	3.6008	5.3820	0.2104	0.4513	0.6617	0.0000	0.0000	0.0000	0.0000
NOMINAL	0.1359	0.0000	0.1359	3.0060	0.0000	3.0060	22.6072	0.0000	22.6072	35.1900	1.3185	2.7731	4.0916	0.0000	0.0000	0.0000	0.0000
NPV	0.1164	0.0000	0.1164	2.5830	0.0000	2.5830	18.3155	0.0000	18.3155		0.9170	1.9312	2.8482		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 18

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	0.022	3.013	0.000	3.035	0.000	0.000	0.017	0.000	0.017	(3.018)	(3.018)
2021	0.000	0.022	3.073	0.000	3.095	0.000	0.000	0.051	0.000	0.051	(3.045)	(5.876)
2022	0.000	0.022	3.135	0.000	3.157	0.000	0.000	0.095	0.000	0.095	(3.062)	(8.576)
2023	0.000	0.023	3.197	0.000	3.220	0.000	0.000	0.142	0.000	0.142	(3.079)	(11.125)
2024	0.000	0.023	3.261	0.000	3.285	0.000	0.000	0.154	0.000	0.154	(3.130)	(13.558)
2025	0.000	0.024	3.327	0.000	3.350	0.000	0.000	0.249	0.000	0.249	(3.101)	(15.822)
2026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.284	0.000	0.284	0.284	(15.627)
2027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.293	0.000	0.293	0.293	(15.438)
2028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.301	0.000	0.301	0.301	(15.256)
2029	0.000	0.000	3.601	0.000	3.601	0.000	0.000	0.282	0.000	0.282	(3.319)	(17.139)
NOMINAL	0.000	0.136	22.607	0.000	22.743	0.000	0.000	1.868	0.000	1.868	(20.875)	
NPV	0.000	0.116	18.316	0.000	18.432	0.000	0.000	1.293	0.000	1.293	(17.139)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.07							





PROGRAM: Commercial Efficient Electric Heat Pump SEER 19

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.57 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.59 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	980.2 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	942.0 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	24.5 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	3,588.7 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.5 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	609 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.016 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Efficient Electric Heat Pump SEER 19

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	1	1	3.00	3.94	3.00	3.00	1	1
2021	2	2	3.26	3.92	3.26	3.26	1	1
2022	3	3	3.41	4.41	3.41	3.41	1	1
2023	4	4	3.53	4.70	3.53	3.53	1	1
2024	5	5	3.60	3.98	3.60	3.60	1	1
2025	6	6	3.70	5.26	3.70	3.70	1	1
2026	6	6	3.77	5.49	3.77	3.77	1	1
2027	6	6	3.90	5.67	3.90	3.90	1	1
2028	6	6	4.00	5.83	4.00	4.00	1	1
2029	7	7	3.91	5.03	3.91	3.91	1	1



INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
 PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
 PLANT COSTS (2020 \$) \$96.84  
 AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 19

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 19

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.019311
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.057564
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.108021
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.161076
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.175559
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.283580
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.322887
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.333592
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.342943
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.320613
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.125146
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.470463

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 19

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	0.4901	0.0193	0.0000	0.0000	0.0193	0.0193
2021	1.4703	0.0576	0.0000	0.0000	0.0576	0.0576
2022	2.4506	0.1080	0.0000	0.0000	0.1080	0.1080
2023	3.4308	0.1611	0.0000	0.0000	0.1611	0.1611
2024	4.4110	0.1756	0.0000	0.0000	0.1756	0.1756
2025	5.3913	0.2836	0.0000	0.0000	0.2836	0.2836
2026	5.8814	0.3229	0.0000	0.0000	0.3229	0.3229
2027	5.8814	0.3336	0.0000	0.0000	0.3336	0.3336
2028	5.8814	0.3429	0.0000	0.0000	0.3429	0.3429
2029	6.3715	0.3206	0.0000	0.0000	0.3206	0.3206
NOMINAL	41.6597	2.1251	0.0000	0.0000	2.1251	2.1251
NPV		1.4705	0.0000	0.0000	1.4705	1.4705

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 19

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES ----->							<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	0.0245	0.0000	0.0245	0.6090	0.0000	0.6090	3.5887	0.0000	3.5887	0.4710	0.0142	0.0330	0.0472	0.0000	0.0000	0.0000	0.0000
2021	0.0250	0.0000	0.0250	0.6090	0.0000	0.6090	3.6604	0.0000	3.6604	1.4130	0.0461	0.1011	0.1472	0.0000	0.0000	0.0000	0.0000
2022	0.0255	0.0000	0.0255	0.6090	0.0000	0.6090	3.7336	0.0000	3.7336	2.3550	0.0803	0.1719	0.2522	0.0000	0.0000	0.0000	0.0000
2023	0.0260	0.0000	0.0260	0.6090	0.0000	0.6090	3.8083	0.0000	3.8083	3.2970	0.1162	0.2455	0.3617	0.0000	0.0000	0.0000	0.0000
2024	0.0265	0.0000	0.0265	0.6090	0.0000	0.6090	3.8845	0.0000	3.8845	4.2390	0.1524	0.3219	0.4744	0.0000	0.0000	0.0000	0.0000
2025	0.0271	0.0000	0.0271	0.6090	0.0000	0.6090	3.9622	0.0000	3.9622	5.1810	0.1919	0.4013	0.5932	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	5.6520	0.2129	0.4466	0.6595	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	5.6520	0.2207	0.4555	0.6762	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	5.6520	0.2260	0.4646	0.6906	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	4.2888	0.0000	4.2888	6.1230	0.2394	0.5134	0.7528	0.0000	0.0000	0.0000	0.0000
NOMINAL	0.1546	0.0000	0.1546	3.6540	0.0000	3.6540	26.9265	0.0000	26.9265	40.0350	1.5001	3.1549	4.6550	0.0000	0.0000	0.0000	0.0000
NPV	0.1324	0.0000	0.1324	3.1398	0.0000	3.1398	21.8149	0.0000	21.8149		1.0433	2.1971	3.2404		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 19

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	0.025	3.589	0.000	3.613	0.000	0.000	0.019	0.000	0.019	(3.594)	(3.594)
2021	0.000	0.025	3.660	0.000	3.685	0.000	0.000	0.058	0.000	0.058	(3.628)	(7.000)
2022	0.000	0.026	3.734	0.000	3.759	0.000	0.000	0.108	0.000	0.108	(3.651)	(10.219)
2023	0.000	0.026	3.808	0.000	3.834	0.000	0.000	0.161	0.000	0.161	(3.673)	(13.260)
2024	0.000	0.027	3.884	0.000	3.911	0.000	0.000	0.176	0.000	0.176	(3.735)	(16.164)
2025	0.000	0.027	3.962	0.000	3.989	0.000	0.000	0.284	0.000	0.284	(3.706)	(18.869)
2026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.323	0.000	0.323	0.323	(18.647)
2027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.334	0.000	0.334	0.334	(18.433)
2028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.343	0.000	0.343	0.343	(18.225)
2029	0.000	0.000	4.289	0.000	4.289	0.000	0.000	0.321	0.000	0.321	(3.968)	(20.477)
NOMINAL	0.000	0.155	26.927	0.000	27.081	0.000	0.000	2.125	0.000	2.125	(24.956)	
NPV	0.000	0.132	21.815	0.000	21.947	0.000	0.000	1.470	0.000	1.470	(20.477)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.07							







PROGRAM: Commercial Efficient Electric Heat Pump SEER 20

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.66	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.69	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	1,130.1	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	1,086.0	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	28.26	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	4,164.3	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.5	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	702	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.016	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Efficient Electric Heat Pump SEER 20

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	1	1	3.00	3.94	3.00	3.00	1	1
2021	2	2	3.26	3.92	3.26	3.26	1	1
2022	3	3	3.41	4.41	3.41	3.41	1	1
2023	4	4	3.53	4.70	3.53	3.53	1	1
2024	5	5	3.60	3.98	3.60	3.60	1	1
2025	6	6	3.70	5.26	3.70	3.70	1	1
2026	6	6	3.77	5.49	3.77	3.77	1	1
2027	6	6	3.90	5.67	3.90	3.90	1	1
2028	6	6	4.00	5.83	4.00	4.00	1	1
2029	7	7	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 20

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 20

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.022262
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.066364
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.124534
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.185699
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.202396
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.326930
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.372246
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.384586
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.395367
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.369624
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.450009
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.695248

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 20

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	0.5650	0.0223	0.0000	0.0000	0.0223	0.0223
2021	1.6951	0.0664	0.0000	0.0000	0.0664	0.0664
2022	2.8252	0.1245	0.0000	0.0000	0.1245	0.1245
2023	3.9553	0.1857	0.0000	0.0000	0.1857	0.1857
2024	5.0853	0.2024	0.0000	0.0000	0.2024	0.2024
2025	6.2154	0.3269	0.0000	0.0000	0.3269	0.3269
2026	6.7804	0.3722	0.0000	0.0000	0.3722	0.3722
2027	6.7804	0.3846	0.0000	0.0000	0.3846	0.3846
2028	6.7804	0.3954	0.0000	0.0000	0.3954	0.3954
2029	7.3455	0.3696	0.0000	0.0000	0.3696	0.3696
NOMINAL	48.0281	2.4500	0.0000	0.0000	2.4500	2.4500
NPV		1.6952	0.0000	0.0000	1.6952	1.6952

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Commercial Efficient Electric Heat Pump SEER 20

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES ----->							----- PARTICIPATING CUSTOMER COSTS & BENEFITS ----->										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	0.0283	0.0000	0.0283	0.7020	0.0000	0.7020	4.1643	0.0000	4.1643	0.5430	0.0163	0.0381	0.0544	0.0000	0.0000	0.0000	0.0000
2021	0.0288	0.0000	0.0288	0.7020	0.0000	0.7020	4.2476	0.0000	4.2476	1.6290	0.0531	0.1166	0.1697	0.0000	0.0000	0.0000	0.0000
2022	0.0294	0.0000	0.0294	0.7020	0.0000	0.7020	4.3326	0.0000	4.3326	2.7150	0.0926	0.1982	0.2907	0.0000	0.0000	0.0000	0.0000
2023	0.0300	0.0000	0.0300	0.7020	0.0000	0.7020	4.4192	0.0000	4.4192	3.8010	0.1340	0.2830	0.4170	0.0000	0.0000	0.0000	0.0000
2024	0.0306	0.0000	0.0306	0.7020	0.0000	0.7020	4.5076	0.0000	4.5076	4.8870	0.1757	0.3711	0.5469	0.0000	0.0000	0.0000	0.0000
2025	0.0312	0.0000	0.0312	0.7020	0.0000	0.7020	4.5978	0.0000	4.5978	5.9730	0.2212	0.4627	0.6839	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.5160	0.2455	0.5148	0.7603	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.5160	0.2544	0.5251	0.7796	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.5160	0.2605	0.5356	0.7962	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	4.9768	0.0000	4.9768	7.0590	0.2760	0.5919	0.8679	0.0000	0.0000	0.0000	0.0000
NOMINAL	0.1783	0.0000	0.1783	4.2120	0.0000	4.2120	31.2459	0.0000	31.2459	46.1550	1.7294	3.6372	5.3666	0.0000	0.0000	0.0000	0.0000
NPV	0.1526	0.0000	0.1526	3.6193	0.0000	3.6193	25.3143	0.0000	25.3143		1.2028	2.5330	3.7357		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 20

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	0.028	4.164	0.000	4.193	0.000	0.000	0.022	0.000	0.022	(4.170)	(4.170)
2021	0.000	0.029	4.248	0.000	4.276	0.000	0.000	0.066	0.000	0.066	(4.210)	(8.123)
2022	0.000	0.029	4.333	0.000	4.362	0.000	0.000	0.125	0.000	0.125	(4.237)	(11.859)
2023	0.000	0.030	4.419	0.000	4.449	0.000	0.000	0.186	0.000	0.186	(4.264)	(15.389)
2024	0.000	0.031	4.508	0.000	4.538	0.000	0.000	0.202	0.000	0.202	(4.336)	(18.759)
2025	0.000	0.031	4.598	0.000	4.629	0.000	0.000	0.327	0.000	0.327	(4.302)	(21.899)
2026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.372	0.000	0.372	0.372	(21.644)
2027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.385	0.000	0.385	0.385	(21.397)
2028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.395	0.000	0.395	0.395	(21.158)
2029	0.000	0.000	4.977	0.000	4.977	0.000	0.000	0.370	0.000	0.370	(4.607)	(23.772)
NOMINAL	0.000	0.178	31.246	0.000	31.424	0.000	0.000	2.450	0.000	2.450	(28.974)	
NPV	0.000	0.153	25.314	0.000	25.467	0.000	0.000	1.695	0.000	1.695	(23.772)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.07							





PROGRAM: Commercial Efficient Electric Heat Pump SEER 21

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.72 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.75 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	1,279.9 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	1,230.0 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	32.01 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	4,740.0 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.5 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	789 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.016 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Efficient Electric Heat Pump SEER 21

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	1	1	3.00	3.94	3.00	3.00	1	1
2021	2	2	3.26	3.92	3.26	3.26	1	1
2022	3	3	3.41	4.41	3.41	3.41	1	1
2023	4	4	3.53	4.70	3.53	3.53	1	1
2024	5	5	3.60	3.98	3.60	3.60	1	1
2025	6	6	3.70	5.26	3.70	3.70	1	1
2026	6	6	3.77	5.49	3.77	3.77	1	1
2027	6	6	3.90	5.67	3.90	3.90	1	1
2028	6	6	4.00	5.83	4.00	4.00	1	1
2029	7	7	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%



AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 21

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 21

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.025214
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.075163
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.141047
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.210322
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.229233
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.370280
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.421605
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.435581
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.447792
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.418635
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.774872
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.920032

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 21

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	0.6400	0.0252	0.0000	0.0000	0.0252	0.0252
2021	1.9199	0.0752	0.0000	0.0000	0.0752	0.0752
2022	3.1998	0.1410	0.0000	0.0000	0.1410	0.1410
2023	4.4797	0.2103	0.0000	0.0000	0.2103	0.2103
2024	5.7596	0.2292	0.0000	0.0000	0.2292	0.2292
2025	7.0395	0.3703	0.0000	0.0000	0.3703	0.3703
2026	7.6795	0.4216	0.0000	0.0000	0.4216	0.4216
2027	7.6795	0.4356	0.0000	0.0000	0.4356	0.4356
2028	7.6795	0.4478	0.0000	0.0000	0.4478	0.4478
2029	8.3195	0.4186	0.0000	0.0000	0.4186	0.4186
NOMINAL	54.3965	2.7749	0.0000	0.0000	2.7749	2.7749
NPV		1.9200	0.0000	0.0000	1.9200	1.9200

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Commercial Efficient Electric Heat Pump SEER 21

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES -----							----- PARTICIPATING CUSTOMER COSTS & BENEFITS -----										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	0.0320	0.0000	0.0320	0.7890	0.0000	0.7890	4.7400	0.0000	4.7400	0.6150	0.0185	0.0431	0.0616	0.0000	0.0000	0.0000	0.0000
2021	0.0326	0.0000	0.0326	0.7890	0.0000	0.7890	4.8348	0.0000	4.8348	1.8450	0.0602	0.1320	0.1922	0.0000	0.0000	0.0000	0.0000
2022	0.0333	0.0000	0.0333	0.7890	0.0000	0.7890	4.9315	0.0000	4.9315	3.0750	0.1048	0.2245	0.3293	0.0000	0.0000	0.0000	0.0000
2023	0.0340	0.0000	0.0340	0.7890	0.0000	0.7890	5.0301	0.0000	5.0301	4.3050	0.1518	0.3205	0.4723	0.0000	0.0000	0.0000	0.0000
2024	0.0346	0.0000	0.0346	0.7890	0.0000	0.7890	5.1307	0.0000	5.1307	5.5350	0.1990	0.4203	0.6194	0.0000	0.0000	0.0000	0.0000
2025	0.0353	0.0000	0.0353	0.7890	0.0000	0.7890	5.2333	0.0000	5.2333	6.7650	0.2505	0.5240	0.7745	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	7.3800	0.2780	0.5831	0.8611	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	7.3800	0.2882	0.5948	0.8829	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	7.3800	0.2951	0.6067	0.9018	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	5.6647	0.0000	5.6647	7.9950	0.3126	0.6704	0.9830	0.0000	0.0000	0.0000	0.0000
NOMINAL	0.2019	0.0000	0.2019	4.7340	0.0000	4.7340	35.5652	0.0000	35.5652	52.2750	1.9587	4.1194	6.0781	0.0000	0.0000	0.0000	0.0000
NPV	0.1729	0.0000	0.1729	4.0678	0.0000	4.0678	28.8137	0.0000	28.8137		1.3622	2.8688	4.2311		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 21

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	0.032	4.740	0.000	4.772	0.000	0.000	0.025	0.000	0.025	(4.747)	(4.747)
2021	0.000	0.033	4.835	0.000	4.867	0.000	0.000	0.075	0.000	0.075	(4.792)	(9.247)
2022	0.000	0.033	4.931	0.000	4.965	0.000	0.000	0.141	0.000	0.141	(4.824)	(13.499)
2023	0.000	0.034	5.030	0.000	5.064	0.000	0.000	0.210	0.000	0.210	(4.854)	(17.518)
2024	0.000	0.035	5.131	0.000	5.165	0.000	0.000	0.229	0.000	0.229	(4.936)	(21.355)
2025	0.000	0.035	5.233	0.000	5.269	0.000	0.000	0.370	0.000	0.370	(4.898)	(24.930)
2026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.422	0.000	0.422	0.422	(24.641)
2027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.436	0.000	0.436	0.436	(24.361)
2028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.448	0.000	0.448	0.448	(24.090)
2029	0.000	0.000	5.665	0.000	5.665	0.000	0.000	0.419	0.000	0.419	(5.246)	(27.066)
NOMINAL	0.000	0.202	35.565	0.000	35.767	0.000	0.000	2.775	0.000	2.775	(32.992)	
NPV	0.000	0.173	28.814	0.000	28.987	0.000	0.000	1.920	0.000	1.920	(27.066)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.07							





PROGRAM: Commercial Efficient Electric Heat Pump SEER 22

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.84	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.87	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	1,450.1	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	1,393.5	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	36.26	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	5,315.7	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.50	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	903	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.016	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0	

\* FIRE Program Version Number: 1.03



INPUT DATA -- PART 2

PROGRAM: Commercial Efficient Electric Heat Pump SEER 22

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	1	1	3.00	3.94	3.00	3.00	1	1
2021	2	2	3.26	3.92	3.26	3.26	1	1
2022	3	3	3.41	4.41	3.41	3.41	1	1
2023	4	4	3.53	4.70	3.53	3.53	1	1
2024	5	5	3.60	3.98	3.60	3.60	1	1
2025	6	6	3.70	5.26	3.70	3.70	1	1
2026	6	6	3.77	5.49	3.77	3.77	1	1
2027	6	6	3.90	5.67	3.90	3.90	1	1
2028	6	6	4.00	5.83	4.00	4.00	1	1
2029	7	7	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 22

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 22

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.028566
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.085154
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.159796
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.238280
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.259704
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.419500
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.477647
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.493482
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.507315
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.474283
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.143727
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.175256

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 22

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	0.7250	0.0286	0.0000	0.0000	0.0286	0.0286
2021	2.1751	0.0852	0.0000	0.0000	0.0852	0.0852
2022	3.6251	0.1598	0.0000	0.0000	0.1598	0.1598
2023	5.0752	0.2383	0.0000	0.0000	0.2383	0.2383
2024	6.5252	0.2597	0.0000	0.0000	0.2597	0.2597
2025	7.9753	0.4195	0.0000	0.0000	0.4195	0.4195
2026	8.7003	0.4776	0.0000	0.0000	0.4776	0.4776
2027	8.7003	0.4935	0.0000	0.0000	0.4935	0.4935
2028	8.7003	0.5073	0.0000	0.0000	0.5073	0.5073
2029	9.4253	0.4743	0.0000	0.0000	0.4743	0.4743
NOMINAL	61.6272	3.1437	0.0000	0.0000	3.1437	3.1437
NPV		2.1753	0.0000	0.0000	2.1753	2.1753

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 22

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES ----->							<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	0.0363	0.0000	0.0363	0.9030	0.0000	0.9030	5.3157	0.0000	5.3157	0.6968	0.0209	0.0489	0.0698	0.0000	0.0000	0.0000	0.0000
2021	0.0370	0.0000	0.0370	0.9030	0.0000	0.9030	5.4220	0.0000	5.4220	2.0903	0.0682	0.1496	0.2178	0.0000	0.0000	0.0000	0.0000
2022	0.0377	0.0000	0.0377	0.9030	0.0000	0.9030	5.5304	0.0000	5.5304	3.4838	0.1188	0.2543	0.3731	0.0000	0.0000	0.0000	0.0000
2023	0.0385	0.0000	0.0385	0.9030	0.0000	0.9030	5.6410	0.0000	5.6410	4.8773	0.1719	0.3631	0.5351	0.0000	0.0000	0.0000	0.0000
2024	0.0393	0.0000	0.0393	0.9030	0.0000	0.9030	5.7538	0.0000	5.7538	6.2708	0.2255	0.4762	0.7017	0.0000	0.0000	0.0000	0.0000
2025	0.0400	0.0000	0.0400	0.9030	0.0000	0.9030	5.8689	0.0000	5.8689	7.6643	0.2838	0.5937	0.8775	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	8.3610	0.3150	0.6606	0.9756	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	8.3610	0.3265	0.6738	1.0003	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	8.3610	0.3343	0.6873	1.0216	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.3527	0.0000	6.3527	9.0578	0.3542	0.7595	1.1136	0.0000	0.0000	0.0000	0.0000
NOMINAL	0.2287	0.0000	0.2287	5.4180	0.0000	5.4180	39.8846	0.0000	39.8846	59.2238	2.2191	4.6670	6.8861	0.0000	0.0000	0.0000	0.0000
NPV	0.1958	0.0000	0.1958	4.6556	0.0000	4.6556	32.3130	0.0000	32.3130		1.5433	3.2502	4.7935		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Efficient Electric Heat Pump SEER 22

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	0.036	5.316	0.000	5.352	0.000	0.000	0.029	0.000	0.029	(5.323)	(5.323)
2021	0.000	0.037	5.422	0.000	5.459	0.000	0.000	0.085	0.000	0.085	(5.374)	(10.369)
2022	0.000	0.038	5.530	0.000	5.568	0.000	0.000	0.160	0.000	0.160	(5.408)	(15.138)
2023	0.000	0.038	5.641	0.000	5.680	0.000	0.000	0.238	0.000	0.238	(5.441)	(19.642)
2024	0.000	0.039	5.754	0.000	5.793	0.000	0.000	0.260	0.000	0.260	(5.533)	(23.943)
2025	0.000	0.040	5.869	0.000	5.909	0.000	0.000	0.420	0.000	0.420	(5.489)	(27.950)
2026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.478	0.000	0.478	0.478	(27.623)
2027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.493	0.000	0.493	0.493	(27.305)
2028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.507	0.000	0.507	0.507	(26.998)
2029	0.000	0.000	6.353	0.000	6.353	0.000	0.000	0.474	0.000	0.474	(5.878)	(30.334)
NOMINAL	0.000	0.229	39.885	0.000	40.113	0.000	0.000	3.144	0.000	3.144	(36.970)	
NPV	0.000	0.196	32.313	0.000	32.509	0.000	0.000	2.175	0.000	2.175	(30.334)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.07							







PROGRAM: Commercial Duct Repair Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.4 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.4 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	401.7 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	386.0 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	10.0 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	253.2 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.5 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	100 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.016 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Duct Repair Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	4	4	3.00	3.94	3.00	3.00	1	1
2021	8	8	3.26	3.92	3.26	3.26	1	1
2022	12	12	3.41	4.41	3.41	3.41	1	1
2023	16	16	3.53	4.70	3.53	3.53	1	1
2024	20	20	3.60	3.98	3.60	3.60	1	1
2025	24	24	3.70	5.26	3.70	3.70	1	1
2026	28	28	3.77	5.49	3.77	3.77	1	1
2027	32	32	3.90	5.67	3.90	3.90	1	1
2028	36	36	4.00	5.83	4.00	4.00	1	1
2029	40	40	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Duct Repair Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1)	(1A)*	(2)	(2A)*	(3)	(4)	(5)	(6)	(6A)	(7)
Year	VALUE OF DEFERRAL FACTOR	AVOIDED GEN UNIT CAPACITY COST \$(000)	AVOIDED ANNUAL UNIT KWH GEN (000)	AVOIDED UNIT FIXED O&M COST \$(000)	AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	AVOIDED GEN UNIT FUEL COST \$(000)	REPLACEMENT FUEL COST \$(000)	AVOIDED PURCHASED CAPACITY COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Duct Repair Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.031651
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.094351
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.177054
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.264014
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.287753
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.464807
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.573337
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.683473
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.796317
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.768048
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4.140804
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2.807499

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



## \* WORKSHEET : DSM PROGRAM FUEL SAVINGS

PROGRAM: Commercial Duct Repair Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	0.8033	0.0317	0.0000	0.0000	0.0317	0.0317
2021	2.4100	0.0944	0.0000	0.0000	0.0944	0.0944
2022	4.0166	0.1771	0.0000	0.0000	0.1771	0.1771
2023	5.6233	0.2640	0.0000	0.0000	0.2640	0.2640
2024	7.2300	0.2878	0.0000	0.0000	0.2878	0.2878
2025	8.8366	0.4648	0.0000	0.0000	0.4648	0.4648
2026	10.4433	0.5733	0.0000	0.0000	0.5733	0.5733
2027	12.0499	0.6835	0.0000	0.0000	0.6835	0.6835
2028	13.6566	0.7963	0.0000	0.0000	0.7963	0.7963
2029	15.2633	0.7680	0.0000	0.0000	0.7680	0.7680
NOMINAL	80.3330	4.1408	0.0000	0.0000	4.1408	4.1408
NPV		2.8075	0.0000	0.0000	2.8075	2.8075

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Commercial Duct Repair Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES -----							----- PARTICIPATING CUSTOMER COSTS & BENEFITS -----										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	0.0402	0.0000	0.0402	0.4000	0.0000	0.4000	1.0127	0.0000	1.0127	0.7720	0.0232	0.0542	0.0774	0.0000	0.0000	0.0000	0.0000
2021	0.0410	0.0000	0.0410	0.4000	0.0000	0.4000	1.0330	0.0000	1.0330	2.3160	0.0755	0.1657	0.2413	0.0000	0.0000	0.0000	0.0000
2022	0.0418	0.0000	0.0418	0.4000	0.0000	0.4000	1.0536	0.0000	1.0536	3.8600	0.1316	0.2818	0.4133	0.0000	0.0000	0.0000	0.0000
2023	0.0426	0.0000	0.0426	0.4000	0.0000	0.4000	1.0747	0.0000	1.0747	5.4040	0.1905	0.4024	0.5928	0.0000	0.0000	0.0000	0.0000
2024	0.0435	0.0000	0.0435	0.4000	0.0000	0.4000	1.0962	0.0000	1.0962	6.9480	0.2499	0.5277	0.7775	0.0000	0.0000	0.0000	0.0000
2025	0.0444	0.0000	0.0444	0.4000	0.0000	0.4000	1.1181	0.0000	1.1181	8.4920	0.3145	0.6578	0.9723	0.0000	0.0000	0.0000	0.0000
2026	0.0452	0.0000	0.0452	0.4000	0.0000	0.4000	1.1405	0.0000	1.1405	10.0360	0.3781	0.7930	1.1711	0.0000	0.0000	0.0000	0.0000
2027	0.0462	0.0000	0.0462	0.4000	0.0000	0.4000	1.1633	0.0000	1.1633	11.5800	0.4522	0.9333	1.3854	0.0000	0.0000	0.0000	0.0000
2028	0.0471	0.0000	0.0471	0.4000	0.0000	0.4000	1.1866	0.0000	1.1866	13.1240	0.5248	1.0788	1.6036	0.0000	0.0000	0.0000	0.0000
2029	0.0480	0.0000	0.0480	0.4000	0.0000	0.4000	1.2103	0.0000	1.2103	14.6680	0.5735	1.2299	1.8034	0.0000	0.0000	0.0000	0.0000
NOMINAL	0.4399	0.0000	0.4399	4.0000	0.0000	4.0000	11.0889	0.0000	11.0889	77.2000	2.9137	6.1244	9.0381	0.0000	0.0000	0.0000	0.0000
NPV	0.3334	0.0000	0.3334	3.0624	0.0000	3.0624	8.4032	0.0000	8.4032		1.9842	4.1752	6.1594		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Duct Repair Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	0.040	1.013	0.000	1.053	0.000	0.000	0.032	0.000	0.032	(1.021)	(1.021)
2021	0.000	0.041	1.033	0.000	1.074	0.000	0.000	0.094	0.000	0.094	(0.980)	(1.941)
2022	0.000	0.042	1.054	0.000	1.095	0.000	0.000	0.177	0.000	0.177	(0.918)	(2.751)
2023	0.000	0.043	1.075	0.000	1.117	0.000	0.000	0.264	0.000	0.264	(0.853)	(3.457)
2024	0.000	0.043	1.096	0.000	1.140	0.000	0.000	0.288	0.000	0.288	(0.852)	(4.119)
2025	0.000	0.044	1.118	0.000	1.162	0.000	0.000	0.465	0.000	0.465	(0.698)	(4.629)
2026	0.000	0.045	1.140	0.000	1.186	0.000	0.000	0.573	0.000	0.573	(0.612)	(5.048)
2027	0.000	0.046	1.163	0.000	1.209	0.000	0.000	0.683	0.000	0.683	(0.526)	(5.387)
2028	0.000	0.047	1.187	0.000	1.234	0.000	0.000	0.796	0.000	0.796	(0.437)	(5.651)
2029	0.000	0.048	1.210	0.000	1.258	0.000	0.000	0.768	0.000	0.768	(0.490)	(5.929)
NOMINAL	0.000	0.440	11.089	0.000	11.529	0.000	0.000	4.141	0.000	4.141	(7.388)	
NPV	0.000	0.333	8.403	0.000	8.737	0.000	0.000	2.807	0.000	2.807	(5.929)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.32							

PARTICIPANT COSTS AND BENEFITS  
PROGRAM: Commercial Duct Repair Rebates

(1) YEAR	(2) SAVINGS IN PARTICIPANTS BILL \$(000)	(3) TAX CREDITS \$(000)	(4) UTILITY REBATES \$(000)	(5) OTHER BENEFITS \$(000)	(6) TOTAL BENEFITS \$(000)	(7) CUSTOMER EQUIPMENT COSTS \$(000)	(8) CUSTOMER O & M COSTS \$(000)	(9) OTHER COSTS \$(000)	(10) TOTAL COSTS \$(000)	(11) NET BENEFITS \$(000)	(12) CUMULATIVE DISCOUNTED NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED BENEFITS \$(000)	CUMULATIVE DISCOUNTED COSTS \$(000)	Benefit to Cost Ratio
2020	0.077	0.000	0.400	0.000	0.477	1.013	0.000	0.000	1.013	(0.535)	(0.535)	0	1	0.47
2021	0.241	0.000	0.400	0.000	0.641	1.033	0.000	0.000	1.033	(0.392)	(0.903)	1	2	0.54
2022	0.413	0.000	0.400	0.000	0.813	1.054	0.000	0.000	1.054	(0.240)	(1.115)	2	3	0.62
2023	0.593	0.000	0.400	0.000	0.993	1.075	0.000	0.000	1.075	(0.082)	(1.183)	3	4	0.69
2024	0.778	0.000	0.400	0.000	1.178	1.096	0.000	0.000	1.096	0.081	(1.120)	4	5	0.76
2025	0.972	0.000	0.400	0.000	1.372	1.118	0.000	0.000	1.118	0.254	(0.934)	5	5	0.83
2026	1.171	0.000	0.400	0.000	1.571	1.140	0.000	0.000	1.140	0.431	(0.639)	6	6	0.90
2027	1.385	0.000	0.400	0.000	1.785	1.163	0.000	0.000	1.163	0.622	(0.239)	7	7	0.97
2028	1.604	0.000	0.400	0.000	2.004	1.187	0.000	0.000	1.187	0.817	0.255	8	8	1.03
2029	1.803	0.000	0.400	0.000	2.203	1.210	0.000	0.000	1.210	0.993	0.819	9	8	1.10
NOMINAL	9.038	0.000	4.000	0.000	13.038	11.089	0.000	0.000	11.089	1.949				
NPV	6.159	0.000	3.062	0.000	9.222	8.403	0.000	0.000	8.403	0.819				

In-service year of generation unit: 2032  
Discount rate: 6.50%  
Benefit/Cost Ratio: 1.10



PROGRAM: Commercial Ceiling Insulation Upgrade Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	0.09	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	0.09	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.90	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	649.32	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.90	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.00	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.00	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	624.00	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	16.2	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	1,143.8	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.5	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	250.0	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	7.016	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.000	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	0.000	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.000	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.000 1.000	

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Ceiling Insulation Upgrade Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	5	5	3.00	3.94	3.00	3.00	1	1
2021	10	10	3.26	3.92	3.26	3.26	1	1
2022	15	15	3.41	4.41	3.41	3.41	1	1
2023	20	20	3.53	4.70	3.53	3.53	1	1
2024	25	25	3.60	3.98	3.60	3.60	1	1
2025	29	29	3.70	5.26	3.70	3.70	1	1
2026	33	33	3.77	5.49	3.77	3.77	1	1
2027	37	37	3.90	5.67	3.90	3.90	1	1
2028	41	41	4.00	5.83	4.00	4.00	1	1
2029	45	45	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0



CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Ceiling Insulation Upgrade Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Ceiling Insulation Upgrade Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.063958
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.190656
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.357775
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.533497
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.581465
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.922163
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.105076
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.289028
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.476610
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.404971
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	7.925200
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	5.401297

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

## \* WORKSHEET : DSM PROGRAM FUEL SAVINGS

PROGRAM: Commercial Ceiling Insulation Upgrade Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	1.6233	0.0640	0.0000	0.0000	0.0640	0.0640
2021	4.8699	0.1907	0.0000	0.0000	0.1907	0.1907
2022	8.1165	0.3578	0.0000	0.0000	0.3578	0.3578
2023	11.3631	0.5335	0.0000	0.0000	0.5335	0.5335
2024	14.6097	0.5815	0.0000	0.0000	0.5815	0.5815
2025	17.5316	0.9222	0.0000	0.0000	0.9222	0.9222
2026	20.1289	1.1051	0.0000	0.0000	1.1051	1.1051
2027	22.7262	1.2890	0.0000	0.0000	1.2890	1.2890
2028	25.3234	1.4766	0.0000	0.0000	1.4766	1.4766
2029	27.9207	1.4050	0.0000	0.0000	1.4050	1.4050
NOMINAL	154.2133	7.9252	0.0000	0.0000	7.9252	7.9252
NPV		5.4013	0.0000	0.0000	5.4013	5.4013

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Commercial Ceiling Insulation Upgrade Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES ----->							<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	0.0812	0.0000	0.0812	1.2500	0.0000	1.2500	5.7188	0.0000	5.7188	1.5600	0.0469	0.1094	0.1563	0.0000	0.0000	0.0000	0.0000
2021	0.0828	0.0000	0.0828	1.2500	0.0000	1.2500	5.8332	0.0000	5.8332	4.6800	0.1526	0.3349	0.4876	0.0000	0.0000	0.0000	0.0000
2022	0.0845	0.0000	0.0845	1.2500	0.0000	1.2500	5.9498	0.0000	5.9498	7.7999	0.2659	0.5694	0.8352	0.0000	0.0000	0.0000	0.0000
2023	0.0862	0.0000	0.0862	1.2500	0.0000	1.2500	6.0688	0.0000	6.0688	10.9199	0.3849	0.8130	1.1980	0.0000	0.0000	0.0000	0.0000
2024	0.0879	0.0000	0.0879	1.2500	0.0000	1.2500	6.1902	0.0000	6.1902	14.0399	0.5049	1.0662	1.5711	0.0000	0.0000	0.0000	0.0000
2025	0.0717	0.0000	0.0717	1.0000	0.0000	1.0000	5.0512	0.0000	5.0512	16.8479	0.6239	1.3051	1.9290	0.0000	0.0000	0.0000	0.0000
2026	0.0731	0.0000	0.0731	1.0000	0.0000	1.0000	5.1522	0.0000	5.1522	19.3439	0.7288	1.5284	2.2571	0.0000	0.0000	0.0000	0.0000
2027	0.0746	0.0000	0.0746	1.0000	0.0000	1.0000	5.2553	0.0000	5.2553	21.8399	0.8528	1.7601	2.6129	0.0000	0.0000	0.0000	0.0000
2028	0.0761	0.0000	0.0761	1.0000	0.0000	1.0000	5.3604	0.0000	5.3604	24.3358	0.9731	2.0005	2.9736	0.0000	0.0000	0.0000	0.0000
2029	0.0776	0.0000	0.0776	1.0000	0.0000	1.0000	5.4676	0.0000	5.4676	26.8318	1.0492	2.2498	3.2990	0.0000	0.0000	0.0000	0.0000
NOMINAL	0.7957	0.0000	0.7957	11.2500	0.0000	11.2500	56.0476	0.0000	56.0476	148.1990	5.5829	11.7368	17.3198	0.0000	0.0000	0.0000	0.0000
NPV	0.6136	0.0000	0.6136	8.7626	0.0000	8.7626	43.2182	0.0000	43.2182		3.8225	8.0456	11.8682		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

0.62399572

TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Ceiling Insulation Upgrade Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	0.081	5.719	0.000	5.800	0.000	0.000	0.064	0.000	0.064	(5.736)	(5.736)
2021	0.000	0.083	5.833	0.000	5.916	0.000	0.000	0.191	0.000	0.191	(5.725)	(11.112)
2022	0.000	0.084	5.950	0.000	6.034	0.000	0.000	0.358	0.000	0.358	(5.677)	(16.117)
2023	0.000	0.086	6.069	0.000	6.155	0.000	0.000	0.533	0.000	0.533	(5.622)	(20.770)
2024	0.000	0.088	6.190	0.000	6.278	0.000	0.000	0.581	0.000	0.581	(5.697)	(25.199)
2025	0.000	0.072	5.051	0.000	5.123	0.000	0.000	0.922	0.000	0.922	(4.201)	(28.265)
2026	0.000	0.073	5.152	0.000	5.225	0.000	0.000	1.105	0.000	1.105	(4.120)	(31.088)
2027	0.000	0.075	5.255	0.000	5.330	0.000	0.000	1.289	0.000	1.289	(4.041)	(33.689)
2028	0.000	0.076	5.360	0.000	5.436	0.000	0.000	1.477	0.000	1.477	(3.960)	(36.081)
2029	0.000	0.078	5.468	0.000	5.545	0.000	0.000	1.405	0.000	1.405	(4.140)	(38.430)
NOMINAL	0.000	0.796	56.048	0.000	56.843	0.000	0.000	7.925	0.000	7.925	(48.918)	
NPV	0.000	0.614	43.218	0.000	43.832	0.000	0.000	5.401	0.000	5.401	(38.430)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.12							







PROGRAM: Commercial Cool Roof Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	25.0	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	26.0	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	137,356.9	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	132,000.0	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	3,435.0	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	79,645.3	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.5	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	2,000	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	2.6	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	10.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT	0.0	
FACTOR FOR CUSTOMER BILL .....	1.0	

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Cool Roof Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	4	4	3.00	3.94	3.00	3.00	1	1
2021	8	8	3.26	3.92	3.26	3.26	1	1
2022	12	12	3.41	4.41	3.41	3.41	1	1
2023	16	16	3.53	4.70	3.53	3.53	1	1
2024	20	20	3.60	3.98	3.60	3.60	1	1
2025	23	23	3.70	5.26	3.70	3.70	1	1
2026	26	26	3.77	5.49	3.77	3.77	1	1
2027	29	29	3.90	5.67	3.90	3.90	1	1
2028	32	32	4.00	5.83	4.00	4.00	1	1
2029	35	35	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Cool Roof Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Cool Roof Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	10.823725
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	32.265140
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	60.546930
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	90.284703
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	98.402497
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	155.336941
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	184.751925
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	214.249324
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	244.283101
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	231.545307
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1,322.489594
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	902.570509

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

## \* WORKSHEET : DSM PROGRAM FUEL SAVINGS

PROGRAM: Commercial Cool Roof Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	274.7138	10.8237	0.0000	0.0000	10.8237	10.8237
2021	824.1415	32.2651	0.0000	0.0000	32.2651	32.2651
2022	1,373.5692	60.5469	0.0000	0.0000	60.5469	60.5469
2023	1,922.9969	90.2847	0.0000	0.0000	90.2847	90.2847
2024	2,472.4246	98.4025	0.0000	0.0000	98.4025	98.4025
2025	2,953.1738	155.3369	0.0000	0.0000	155.3369	155.3369
2026	3,365.2445	184.7519	0.0000	0.0000	184.7519	184.7519
2027	3,777.3153	214.2493	0.0000	0.0000	214.2493	214.2493
2028	4,189.3861	244.2831	0.0000	0.0000	244.2831	244.2831
2029	4,601.4568	231.5453	0.0000	0.0000	231.5453	231.5453
NOMINAL	25,754.4225	1,322.4896	0.0000	0.0000	1,322.4896	1,322.4896
NPV		902.5705	0.0000	0.0000	902.5705	902.5705

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Commercial Cool Roof Rebates

(1)	(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18)																	
	----- UTILITY PROGRAM COSTS & REBATES -----						----- PARTICIPATING CUSTOMER COSTS & BENEFITS -----											
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	13.7399	0.0000	13.7399	8.0000	0.0000	8.0000	318.5813	0.0000	318.5813	264.0000	7.9319	12.7478	20.6798	0.0000	0.0000	0.0000	0.0000	
2021	14.0147	0.0000	14.0147	8.0000	0.0000	8.0000	324.9529	0.0000	324.9529	792.0000	25.8322	39.0084	64.8406	0.0000	0.0000	0.0000	0.0000	
2022	14.2950	0.0000	14.2950	8.0000	0.0000	8.0000	331.4520	0.0000	331.4520	1,320.0000	44.9973	66.3143	111.3116	0.0000	0.0000	0.0000	0.0000	
2023	14.5809	0.0000	14.5809	8.0000	0.0000	8.0000	338.0810	0.0000	338.0810	1,848.0000	65.1421	94.6968	159.8389	0.0000	0.0000	0.0000	0.0000	
2024	14.8726	0.0000	14.8726	8.0000	0.0000	8.0000	344.8426	0.0000	344.8426	2,376.0000	85.4433	124.1880	209.6314	0.0000	0.0000	0.0000	0.0000	
2025	11.3775	0.0000	11.3775	6.0000	0.0000	6.0000	263.8046	0.0000	263.8046	2,838.0000	105.0932	151.3024	256.3956	0.0000	0.0000	0.0000	0.0000	
2026	11.6051	0.0000	11.6051	6.0000	0.0000	6.0000	269.0807	0.0000	269.0807	3,234.0000	121.8371	175.8627	297.6998	0.0000	0.0000	0.0000	0.0000	
2027	11.8372	0.0000	11.8372	6.0000	0.0000	6.0000	274.4623	0.0000	274.4623	3,630.0000	141.7412	201.3448	343.0860	0.0000	0.0000	0.0000	0.0000	
2028	12.0739	0.0000	12.0739	6.0000	0.0000	6.0000	279.9515	0.0000	279.9515	4,026.0000	160.9808	227.7759	388.7567	0.0000	0.0000	0.0000	0.0000	
2029	12.3154	0.0000	12.3154	6.0000	0.0000	6.0000	285.5506	0.0000	285.5506	4,422.0000	172.9090	255.1837	428.0927	0.0000	0.0000	0.0000	0.0000	
NOMINAL	130.7122	0.0000	130.7122	70.0000	0.0000	70.0000	3,030.7594	0.0000	3,030.7594	24,750.0000	931.9081	1,348.4249	2,280.3330	0.0000	0.0000	0.0000	0.0000	
NPV	101.2917	0.0000	101.2917	54.7882	0.0000	54.7882	2,348.6010	0.0000	2,348.6010		638.9907	925.7036	1,564.6944		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Cool Roof Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	13.740	318.581	0.000	332.321	0.000	0.000	10.824	0.000	10.824	(321.497)	(321.497)
2021	0.000	14.015	324.953	0.000	338.968	0.000	0.000	32.265	0.000	32.265	(306.702)	(609.481)
2022	0.000	14.295	331.452	0.000	345.747	0.000	0.000	60.547	0.000	60.547	(285.200)	(860.930)
2023	0.000	14.581	338.081	0.000	352.662	0.000	0.000	90.285	0.000	90.285	(262.377)	(1,078.139)
2024	0.000	14.873	344.843	0.000	359.715	0.000	0.000	98.402	0.000	98.402	(261.313)	(1,281.263)
2025	0.000	11.378	263.805	0.000	275.182	0.000	0.000	155.337	0.000	155.337	(119.845)	(1,368.736)
2026	0.000	11.605	269.081	0.000	280.686	0.000	0.000	184.752	0.000	184.752	(95.934)	(1,434.483)
2027	0.000	11.837	274.462	0.000	286.299	0.000	0.000	214.249	0.000	214.249	(72.050)	(1,480.848)
2028	0.000	12.074	279.952	0.000	292.025	0.000	0.000	244.283	0.000	244.283	(47.742)	(1,509.695)
2029	0.000	12.315	285.551	0.000	297.866	0.000	0.000	231.545	0.000	231.545	(66.321)	(1,547.322)
NOMINAL	0.000	130.712	3,030.759	0.000	3,161.472	0.000	0.000	1,322.490	0.000	1,322.490	(1,838.982)	
NPV	0.000	101.292	2,348.601	0.000	2,449.893	0.000	0.000	902.571	0.000	902.571	(1,547.322)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.37							





PROGRAM: Commercial Indoor Lighting Billed Solution

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	94.1	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	97.9	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	605,042.8	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	581,446.2	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	15,130.8	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	158,034.6	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.50	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	79,017	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	2.556	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	10.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT	0.0	
FACTOR FOR CUSTOMER BILL .....	1.0	

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Indoor Lighting Billed Solution

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	5	5	3.00	3.94	3.00	3.00	1	1
2021	10	10	3.26	3.92	3.26	3.26	1	1
2022	15	15	3.41	4.41	3.41	3.41	1	1
2023	20	20	3.53	4.70	3.53	3.53	1	1
2024	24	24	3.60	3.98	3.60	3.60	1	1
2025	28	28	3.70	5.26	3.70	3.70	1	1
2026	32	32	3.77	5.49	3.77	3.77	1	1
2027	36	36	3.90	5.67	3.90	3.90	1	1
2028	40	40	4.00	5.83	4.00	4.00	1	1
2029	44	44	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Indoor Lighting Billed Solution

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1) Year	(1A)* VALUE OF DEFERRAL FACTOR	(2) AVOIDED GEN UNIT CAPACITY COST \$(000)	(2A)* AVOIDED ANNUAL UNIT KWH GEN (000)	(3) AVOIDED UNIT FIXED O&M COST \$(000)	(4) AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	(5) AVOIDED GEN UNIT FUEL COST \$(000)	(6) REPLACEMENT FUEL COST \$(000)	(6A) AVOIDED PURCHASED CAPACITY COSTS \$(000)	(7) AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Indoor Lighting Billed Solution

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	59.596718
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	177.655698
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	333.378594
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	497.118307
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	529.775493
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	827.456561
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	996.505525
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1,166.812978
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1,340.641780
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1,278.721698
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	7,207.663351
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4,916.961358

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Commercial Indoor Lighting Billed Solution

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	1,512.6071	59.5967	0.0000	0.0000	59.5967	59.5967
2021	4,537.8212	177.6557	0.0000	0.0000	177.6557	177.6557
2022	7,563.0353	333.3786	0.0000	0.0000	333.3786	333.3786
2023	10,588.2494	497.1183	0.0000	0.0000	497.1183	497.1183
2024	13,310.9420	529.7755	0.0000	0.0000	529.7755	529.7755
2025	15,731.1133	827.4566	0.0000	0.0000	827.4566	827.4566
2026	18,151.2846	996.5055	0.0000	0.0000	996.5055	996.5055
2027	20,571.4559	1,166.8130	0.0000	0.0000	1,166.8130	1,166.8130
2028	22,991.6272	1,340.6418	0.0000	0.0000	1,340.6418	1,340.6418
2029	25,411.7984	1,278.7217	0.0000	0.0000	1,278.7217	1,278.7217
NOMINAL	140,369.9343	7,207.6634	0.0000	0.0000	7,207.6634	7,207.6634
NPV		4,916.9614	0.0000	0.0000	4,916.9614	4,916.9614

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
PROGRAM: Commercial Indoor Lighting Billed Solution

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
----- UTILITY PROGRAM COSTS & REBATES ----->							<----- PARTICIPATING CUSTOMER COSTS & BENEFITS----->										
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	75.6538	0.0000	75.6538	395.0865	0.0000	395.0865	790.1729	0.0000	790.1729	1,453.6154	43.6741	65.3787	109.0528	0.0000	0.0000	0.0000	0.0000
2021	77.1668	0.0000	77.1668	395.0865	0.0000	395.0865	805.9764	0.0000	805.9764	4,360.8461	142.2353	200.0587	342.2940	0.0000	0.0000	0.0000	0.0000
2022	78.7102	0.0000	78.7102	395.0865	0.0000	395.0865	822.0959	0.0000	822.0959	7,268.0769	247.7604	340.0998	587.8603	0.0000	0.0000	0.0000	0.0000
2023	80.2844	0.0000	80.2844	395.0865	0.0000	395.0865	838.5379	0.0000	838.5379	10,175.3076	358.6802	485.6625	844.3427	0.0000	0.0000	0.0000	0.0000
2024	65.5120	0.0000	65.5120	316.0692	0.0000	316.0692	684.2469	0.0000	684.2469	12,791.8153	460.0064	622.7581	1,082.7645	0.0000	0.0000	0.0000	0.0000
2025	66.8223	0.0000	66.8223	316.0692	0.0000	316.0692	697.9318	0.0000	697.9318	15,117.5999	559.8156	750.7066	1,310.5222	0.0000	0.0000	0.0000	0.0000
2026	68.1587	0.0000	68.1587	316.0692	0.0000	316.0692	711.8905	0.0000	711.8905	17,443.3845	657.1587	883.5239	1,540.6827	0.0000	0.0000	0.0000	0.0000
2027	69.5219	0.0000	69.5219	316.0692	0.0000	316.0692	726.1283	0.0000	726.1283	19,769.1691	771.9297	1,021.3537	1,793.2833	0.0000	0.0000	0.0000	0.0000
2028	70.9123	0.0000	70.9123	316.0692	0.0000	316.0692	740.6508	0.0000	740.6508	22,094.9537	883.4733	1,164.3432	2,047.8165	0.0000	0.0000	0.0000	0.0000
2029	72.3306	0.0000	72.3306	316.0692	0.0000	316.0692	755.4639	0.0000	755.4639	24,420.7383	954.8993	1,312.6437	2,267.5431	0.0000	0.0000	0.0000	0.0000
NOMINAL	725.0730	0.0000	725.0730	3,476.7610	0.0000	3,476.7610	7,573.0953	0.0000	7,573.0953	134,895.5068	5,079.6331	6,846.5289	11,926.1619	0.0000	0.0000	0.0000	0.0000
NPV	558.9998	0.0000	558.9998	2,708.1512	0.0000	2,708.1512	5,838.5277	0.0000	5,838.5277		3,481.4762	4,698.1669	8,179.6430		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Indoor Lighting Billed Solution

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	75.654	790.173	0.000	865.827	0.000	0.000	59.597	0.000	59.597	(806.230)	(806.230)
2021	0.000	77.167	805.976	0.000	883.143	0.000	0.000	177.656	0.000	177.656	(705.488)	(1,468.660)
2022	0.000	78.710	822.096	0.000	900.806	0.000	0.000	333.379	0.000	333.379	(567.428)	(1,968.937)
2023	0.000	80.284	838.538	0.000	918.822	0.000	0.000	497.118	0.000	497.118	(421.704)	(2,318.045)
2024	0.000	65.512	684.247	0.000	749.759	0.000	0.000	529.775	0.000	529.775	(219.983)	(2,489.043)
2025	0.000	66.822	697.932	0.000	764.754	0.000	0.000	827.457	0.000	827.457	62.702	(2,443.277)
2026	0.000	68.159	711.890	0.000	780.049	0.000	0.000	996.506	0.000	996.506	216.456	(2,294.932)
2027	0.000	69.522	726.128	0.000	795.650	0.000	0.000	1,166.813	0.000	1,166.813	371.163	(2,056.087)
2028	0.000	70.912	740.651	0.000	811.563	0.000	0.000	1,340.642	0.000	1,340.642	529.079	(1,736.401)
2029	0.000	72.331	755.464	0.000	827.794	0.000	0.000	1,278.722	0.000	1,278.722	450.927	(1,480.566)
NOMINAL	0.000	725.073	7,573.095	0.000	8,298.168	0.000	0.000	7,207.663	0.000	7,207.663	(1,090.505)	
NPV	0.000	559.000	5,838.528	0.000	6,397.527	0.000	0.000	4,916.961	0.000	4,916.961	(1,480.566)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.77							





PROGRAM: Commercial Indoor Lighting Rebates

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	28.2 KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	29.4 KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9 %
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	173,955.5 KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9 %
(6) GROUP LINE LOSS MULTIPLIER .....	1.0
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0 KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	167,171.3 KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10 YEARS
(2) GENERATOR ECONOMIC LIFE .....	20 YEARS
(3) T & D ECONOMIC LIFE .....	20 YEARS
(4) K FACTOR FOR GENERATION .....	0.22
(5) K FACTOR FOR T & D .....	0
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	4,350.2 \$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0 \$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0 %
(4) CUSTOMER EQUIPMENT COST .....	45,436.4 \$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0 %
(6) CUSTOMER O & M COST .....	0.0 \$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0 %
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0 \$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0 %
(10)* INCREASED SUPPLY COSTS .....	0.0 \$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0 %
(12)* UTILITY DISCOUNT RATE .....	6.50 %
(13)* UTILITY AFUDC RATE .....	6.50 %
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	7,163 \$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0 \$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0 %

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84 \$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0 \$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0 \$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0 %
(8) GENERATOR FIXED O & M COST .....	15.83 \$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0 %
(10) TRANSMISSION FIXED O & M COST .....	0 \$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0 \$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0 %
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0 CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0 %
(15) GENERATOR CAPACITY FACTOR .....	65 %
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0 CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0 %
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0 \$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0 %

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	2,556 CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0 %
(3) CUSTOMER DEMAND CHARGE PER KW .....	10.0 \$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0 %
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL .....	0.0 1.0

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Commercial Indoor Lighting Rebates

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	16	16	3.00	3.94	3.00	3.00	1	1
2021	32	32	3.26	3.92	3.26	3.26	1	1
2022	47	47	3.41	4.41	3.41	3.41	1	1
2023	62	62	3.53	4.70	3.53	3.53	1	1
2024	76	76	3.60	3.98	3.60	3.60	1	1
2025	90	90	3.70	5.26	3.70	3.70	1	1
2026	103	103	3.77	5.49	3.77	3.77	1	1
2027	116	116	3.90	5.67	3.90	3.90	1	1
2028	129	129	4.00	5.83	4.00	4.00	1	1
2029	142	142	3.91	5.03	3.91	3.91	1	1



INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS  
PROGRAM: Commercial Indoor Lighting Rebates

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1)	(1A)*	(2)	(2A)*	(3)	(4)	(5)	(6)	(6A)	(7)
Year	VALUE OF DEFERRAL FACTOR	AVOIDED GEN UNIT CAPACITY COST \$(000)	AVOIDED ANNUAL UNIT KWH GEN (000)	AVOIDED UNIT FIXED O&M COST \$(000)	AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	AVOIDED GEN UNIT FUEL COST \$(000)	REPLACEMENT FUEL COST \$(000)	AVOIDED PURCHASED CAPACITY COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Commercial Indoor Lighting Rebates

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	AVOIDED TRANSMISSION CAPACITY COST \$(000)	AVOIDED TRANSMISSION O&M COST (000)	TOTAL AVOIDED TRANSMISSION COST \$(000)	AVOIDED DISTRIBUTION CAPACITY COST \$(000)	AVOIDED DISTRIBUTION O&M COST \$(000)	TOTAL AVOIDED DISTRIBUTION COST \$(000)	PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	54.830780
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	163.448608
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	302.884396
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	445.113039
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	477.716653
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	759.455015
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	921.590259
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1,080.409910
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1,242.559940
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1,186.091368
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	6,634.099968
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4,520.056737

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Commercial Indoor Lighting Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	1,391.6442	54.8308	0.0000	0.0000	54.8308	54.8308
2021	4,174.9325	163.4486	0.0000	0.0000	163.4486	163.4486
2022	6,871.2431	302.8844	0.0000	0.0000	302.8844	302.8844
2023	9,480.5759	445.1130	0.0000	0.0000	445.1130	445.1130
2024	12,002.9310	477.7167	0.0000	0.0000	477.7167	477.7167
2025	14,438.3083	759.4550	0.0000	0.0000	759.4550	759.4550
2026	16,786.7078	921.5903	0.0000	0.0000	921.5903	921.5903
2027	19,048.1296	1,080.4099	0.0000	0.0000	1,080.4099	1,080.4099
2028	21,309.5514	1,242.5599	0.0000	0.0000	1,242.5599	1,242.5599
2029	23,570.9731	1,186.0914	0.0000	0.0000	1,186.0914	1,186.0914
NOMINAL	129,074.9968	6,634.1000	0.0000	0.0000	6,634.1000	6,634.1000
NPV		4,520.0567	0.0000	0.0000	4,520.0567	4,520.0567

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Commercial Indoor Lighting Rebates

(1)	(2)----- (3)----- (4)----- (5)----- (6)----- (7)----- (8)----- (9)----- (10)----- (11)----- (12)----- (13)----- (14)----- (15)----- (16)----- (17)----- (18)																	
	<----- UTILITY PROGRAM COSTS & REBATES ----->						<----- PARTICIPATING CUSTOMER COSTS & BENEFITS ----->											
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)	
2020	69.6037	0.0000	69.6037	114.6075	0.0000	114.6075	726.9830	0.0000	726.9830	1,337.3700	40.1815	61.2689	101.4504	0.0000	0.0000	0.0000	0.0000	
2021	70.9958	0.0000	70.9958	114.6075	0.0000	114.6075	741.5226	0.0000	741.5226	4,012.1101	130.8607	187.4828	318.3436	0.0000	0.0000	0.0000	0.0000	
2022	67.8897	0.0000	67.8897	107.4446	0.0000	107.4446	709.0810	0.0000	709.0810	6,603.2646	225.0978	314.7368	539.8345	0.0000	0.0000	0.0000	0.0000	
2023	69.2475	0.0000	69.2475	107.4446	0.0000	107.4446	723.2626	0.0000	723.2626	9,110.8335	321.1574	442.9422	764.0996	0.0000	0.0000	0.0000	0.0000	
2024	65.9237	0.0000	65.9237	100.2816	0.0000	100.2816	688.5460	0.0000	688.5460	11,534.8167	414.8035	572.0050	986.8085	0.0000	0.0000	0.0000	0.0000	
2025	67.2421	0.0000	67.2421	100.2816	0.0000	100.2816	702.3170	0.0000	702.3170	13,875.2142	513.8092	701.8253	1,215.6344	0.0000	0.0000	0.0000	0.0000	
2026	63.6879	0.0000	63.6879	93.1186	0.0000	93.1186	665.1945	0.0000	665.1945	16,132.0262	607.7549	832.2971	1,440.0520	0.0000	0.0000	0.0000	0.0000	
2027	64.9617	0.0000	64.9617	93.1186	0.0000	93.1186	678.4984	0.0000	678.4984	18,305.2525	714.7679	963.3084	1,678.0764	0.0000	0.0000	0.0000	0.0000	
2028	66.2609	0.0000	66.2609	93.1186	0.0000	93.1186	692.0683	0.0000	692.0683	20,478.4789	818.8381	1,099.2273	1,918.0654	0.0000	0.0000	0.0000	0.0000	
2029	67.5861	0.0000	67.5861	93.1186	0.0000	93.1186	705.9097	0.0000	705.9097	22,651.7052	885.7266	1,240.1976	2,125.9242	0.0000	0.0000	0.0000	0.0000	
NOMINAL	673.3992	0.0000	673.3992	1,017.1419	0.0000	1,017.1419	7,033.3832	0.0000	7,033.3832	124,041.0720	4,672.9975	6,415.2914	11,088.2889	0.0000	0.0000	0.0000	0.0000	
NPV	517.6042	0.0000	517.6042	789.8786	0.0000	789.8786	5,406.1668	0.0000	5,406.1668		3,198.6007	4,396.4846	7,595.0853		0.0000	0.0000	0.0000	

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Commercial Indoor Lighting Rebates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	69.604	726.983	0.000	796.587	0.000	0.000	54.831	0.000	54.831	(741.756)	(741.756)
2021	0.000	70.996	741.523	0.000	812.518	0.000	0.000	163.449	0.000	163.449	(649.070)	(1,351.211)
2022	0.000	67.890	709.081	0.000	776.971	0.000	0.000	302.884	0.000	302.884	(474.086)	(1,769.194)
2023	0.000	69.248	723.263	0.000	792.510	0.000	0.000	445.113	0.000	445.113	(347.397)	(2,056.786)
2024	0.000	65.924	688.546	0.000	754.470	0.000	0.000	477.717	0.000	477.717	(276.753)	(2,271.913)
2025	0.000	67.242	702.317	0.000	769.559	0.000	0.000	759.455	0.000	759.455	(10.104)	(2,279.288)
2026	0.000	63.688	665.194	0.000	728.882	0.000	0.000	921.590	0.000	921.590	192.708	(2,147.218)
2027	0.000	64.962	678.498	0.000	743.460	0.000	0.000	1,080.410	0.000	1,080.410	336.950	(1,930.389)
2028	0.000	66.261	692.068	0.000	758.329	0.000	0.000	1,242.560	0.000	1,242.560	484.231	(1,637.802)
2029	0.000	67.586	705.910	0.000	773.496	0.000	0.000	1,186.091	0.000	1,186.091	412.596	(1,403.714)
NOMINAL	0.000	673.399	7,033.383	0.000	7,706.782	0.000	0.000	6,634.100	0.000	6,634.100	(1,072.682)	
NPV	0.000	517.604	5,406.167	0.000	5,923.771	0.000	0.000	4,520.057	0.000	4,520.057	(1,403.714)	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	0.76							







PROGRAM: Custom Incentives

I. PROGRAM DEMAND SAVINGS AND LINE LOSSES

(1) CUSTOMER KW REDUCTION AT THE METER .....	30.8	KW /CUST
(2) GENERATOR KW REDUCTION PER CUSTOMER .....	32.1	KW GEN/CUST
(3) KW LINE LOSS PERCENTAGE .....	3.9	%
(4) GENERATION KWH REDUCTION PER CUSTOMER .....	101,384.5	KWH/CUST/YR
(5) KWH LINE LOSS PERCENTAGE .....	3.9	%
(6) GROUP LINE LOSS MULTIPLIER .....	1.0	
(7) CUSTOMER KWH PROGRAM INCREASE AT METER .....	0.0	KWH/CUST/YR
(8)* CUSTOMER KWH REDUCTION AT METER .....	97,430.5	KWH/CUST/YR

II. ECONOMIC LIFE AND K FACTORS

(1) STUDY PERIOD FOR CONSERVATION PROGRAM .....	10	YEARS
(2) GENERATOR ECONOMIC LIFE .....	20	YEARS
(3) T & D ECONOMIC LIFE .....	20	YEARS
(4) K FACTOR FOR GENERATION .....	0.22	
(5) K FACTOR FOR T & D .....	0	
(6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) .....	1	

III. UTILITY AND CUSTOMER COSTS

(1)** UTILITY NONRECURRING COST PER CUSTOMER .....	2,535.4	\$/CUST
(2)** UTILITY RECURRING COST PER CUSTOMER .....	0.0	\$/CUST/YR
(3) UTILITY COST ESCALATION RATE .....	2.0	%
(4) CUSTOMER EQUIPMENT COST .....	14,614.6	\$/CUST
(5) CUSTOMER EQUIPMENT ESCALATION RATE .....	2.0	%
(6) CUSTOMER O & M COST .....	0.0	\$/CUST/YR
(7) CUSTOMER O & M ESCALATION RATE .....	2.0	%
(8)* CUSTOMER TAX CREDIT PER INSTALLATION .....	0.0	\$/CUST
(9)* CUSTOMER TAX CREDIT ESCALATION RATE .....	2.0	%
(10)* INCREASED SUPPLY COSTS .....	0.0	\$/CUST/YR
(11)* SUPPLY COSTS ESCALATION RATE .....	2.0	%
(12)* UTILITY DISCOUNT RATE .....	6.50	%
(13)* UTILITY AFUDC RATE .....	6.5	%
(14)* UTILITY NON RECURRING REBATE/INCENTIVE .....	8,997.9	\$/CUST
(15)* UTILITY RECURRING REBATE/INCENTIVE .....	0.0	\$/CUST/YR
(16)* UTILITY REBATE/INCENTIVE ESCAL RATE .....	0.0	%

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\*\* NONRECURRING & RECURRING COSTS IN INPUTS III.(1 & 2) DO NOT INCLUDE CUSTOMER REBATES PAID BY THE UTILITY. UTILITY REBATES ARE INPUT IN III.(14 & 15).

IV. AVOIDED GENERATOR, TRANS. AND DIST. COSTS

(1) BASE YEAR .....	2020	
(2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT .....	2032	
(3) IN-SERVICE YEAR FOR AVOIDED T & D .....	2032	
(4) BASE YEAR AVOIDED GENERATING UNIT COST .....	96.84	\$/KW
(5) BASE YEAR AVOIDED TRANSMISSION COST .....	0	\$/KW
(6) BASE YEAR DISTRIBUTION COST .....	0	\$/KW
(7) GEN, TRAN, & DIST COST ESCALATION RATE .....	0	%
(8) GENERATOR FIXED O & M COST .....	15.83	\$/KW/YR
(9) GENERATOR FIXED O&M ESCALATION RATE .....	2.0	%
(10) TRANSMISSION FIXED O & M COST .....	0	\$/KW/YR
(11) DISTRIBUTION FIXED O & M COST .....	0	\$/KW/YR
(12) T&D FIXED O&M ESCALATION RATE .....	0	%
(13) AVOIDED GEN UNIT VARIABLE O & M COSTS .....	0	CENTS/KWH
(14) GENERATOR VARIABLE O&M COST ESCALATION RATE .....	2.0	%
(15) GENERATOR CAPACITY FACTOR .....	65	%
(16) AVOIDED GENERATING UNIT FUEL COST .....	3.0	CENTS/KWH
(17) AVOIDED GEN UNIT FUEL ESCALATION RATE .....	2.0	%
(18)* AVOIDED PURCHASE CAPACITY COST PER KW .....	0	\$/KW/YR
(19)* CAPACITY COST ESCALATION RATE .....	2.0	%

V. NON-FUEL ENERGY AND DEMAND CHARGES

(1) NON-FUEL COST IN CUSTOMER BILL .....	2.556	CENTS/KWH
(2) NON-FUEL ESCALATION RATE .....	2.0	%
(3) CUSTOMER DEMAND CHARGE PER KW .....	10.0	\$/KW/MO
(4) DEMAND CHARGE ESCALATION RATE .....	2.0	%
(5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT	0.0	
FACTOR FOR CUSTOMER BILL .....	1.0	

\* FIRE Program Version Number: 1.03

INPUT DATA -- PART 2

PROGRAM: Custom Incentives

\* Avoided Generation Unit: 1x1 Combined Cycle (in 2032)  
 \* Program Generation Equivalency Factor: 1.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	CUMULATIVE TOTAL PARTICIPATING CUSTOMERS	ADJUSTED CUMULATIVE PARTICIPATING CUSTOMERS	UTILITY AVERAGE SYSTEM FUEL COSTS (C/KWH)	AVOIDED MARGINAL FUEL COST (C/KWH)	INCREASED MARGINAL FUEL COST (C/KWH)	REPLACEMENT FUEL COST (C/KWH)	PROGRAM KW EFFECTIVENESS FACTOR	PROGRAM KWH EFFECTIVENESS FACTOR
2020	13	13	3.00	3.94	3.00	3.00	1	1
2021	26	26	3.26	3.92	3.26	3.26	1	1
2022	39	39	3.41	4.41	3.41	3.41	1	1
2023	51	51	3.53	4.70	3.53	3.53	1	1
2024	63	63	3.60	3.98	3.60	3.60	1	1
2025	74	74	3.70	5.26	3.70	3.70	1	1
2026	85	85	3.77	5.49	3.77	3.77	1	1
2027	96	96	3.90	5.67	3.90	3.90	1	1
2028	107	107	4.00	5.83	4.00	4.00	1	1
2029	118	118	3.91	5.03	3.91	3.91	1	1

INPUTS FOR OTHER COSTS & BENEFITS - EXTERNALLY CALC., FORMS 2.3, 2.4, & 2.5

	(1)	(2)	(3)	(4)	(5)	(6)
	<-- FORM 2.3 --->		<---- FORM 2.4 --->		<---- FORM 2.5 ---->	
	Total Resource Test		Participants Test		Rate Impact Test	
	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER
	COSTS	BENEFITS	COSTS	BENEFITS	COSTS	BENEFITS
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
2020	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0

CALCULATION OF AFUDC AND IN-SERVICE COST OF PLANT  
PLANT: 2032 AVOIDED UNIT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YEAR	NO. YEARS BEFORE IN-SERVICE	PLANT ESCALATION RATE (%)	CUMULATIVE ESCALATION FACTOR	YEARLY EXPENDITURE (%)	ANNUAL SPENDING (\$/KW)	CUMULATIVE AVERAGE SPENDING (\$/KW)	CUMULATIVE SPENDING WITH AFUDC (\$/KW)	YEARLY TOTAL AFUDC (\$/KW)	INCREMENTAL YEAR-END BOOK VALUE (\$/KW)	CUMULATIVE YEAR-END BOOK VALUE (\$/KW)
2020	12	2.00%	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2021	11	2.00%	2.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2022	10	2.00%	4.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2023	9	2.00%	6.1%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2024	8	2.00%	8.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2025	7	2.00%	10.4%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2026	6	2.00%	12.6%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	2.00%	14.9%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2028	4	2.00%	17.2%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
2029	3	2.00%	19.5%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00			0.00	0.00	

IN-SERVICE YEAR = 2032  
PLANT COSTS (2020 \$) \$96.84  
AFUDC RATE 6.5%

AVOIDED GENERATION UNIT BENEFITS

PROGRAM: Custom Incentives

\* UNIT SIZE OF AVOIDED GENERATION UNIT = 0 kW  
\* INSERVICE COSTS OF AVOIDED GEN. UNIT (000) = \$0

(1)	(1A)*	(2)	(2A)*	(3)	(4)	(5)	(6)	(6A)	(7)
Year	VALUE OF DEFERRAL FACTOR	AVOIDED GEN UNIT CAPACITY COST \$(000)	AVOIDED ANNUAL UNIT KWH GEN (000)	AVOIDED UNIT FIXED O&M COST \$(000)	AVOIDED GEN UNIT VARIABLE O&M COST \$(000)	AVOIDED GEN UNIT FUEL COST \$(000)	REPLACEMENT FUEL COST \$(000)	AVOIDED PURCHASED CAPACITY COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NOMINAL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NPV		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

AVOIDED T & D AND PROGRAM FUEL BENEFITS  
PROGRAM: Custom Incentives

\* INSERVICE COSTS OF AVOIDED TRANS. (000) = \$0  
\* INSERVICE COSTS OF AVOIDED DIST. (000) = \$0

(1) Year	(2) AVOIDED TRANSMISSION CAPACITY COST \$(000)	(3) AVOIDED TRANSMISSION O&M COST (000)	(4) TOTAL AVOIDED TRANSMISSION COST \$(000)	(5) AVOIDED DISTRIBUTION CAPACITY COST \$(000)	(6) AVOIDED DISTRIBUTION O&M COST \$(000)	(7) TOTAL AVOIDED DISTRIBUTION COST \$(000)	(8) PROGRAM FUEL SAVINGS \$(000)
2020	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	25.964581
2021	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	77.399494
2022	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	145.243496
2023	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	214.200192
2024	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	230.000973
2025	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	365.298646
2026	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	442.497905
2027	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	520.423079
2028	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	600.040867
2029	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	573.937896
NOMINAL	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3,195.007130
NPV	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2,175.773744

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

\* WORKSHEET : DSM PROGRAM FUEL SAVINGS  
PROGRAM: Custom Incentives

(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	REDUCTION IN KWH GENERATION NET NEW CUST KWH (000)	AVOIDED MARGINAL FUEL COST - REDUCED KWH \$(000)	INCREASE IN KWH GENERATION NET NEW CUST KWH (000)	INCREASED MARGINAL FUEL COST - INCREASE KWH \$(000)	NET AVOIDED PROGRAM FUEL SAVINGS \$(000)	EFFECTIVE PROGRAM FUEL SAVINGS \$(000)
2020	658.9995	25.9646	0.0000	0.0000	25.9646	25.9646
2021	1,976.9986	77.3995	0.0000	0.0000	77.3995	77.3995
2022	3,294.9976	145.2435	0.0000	0.0000	145.2435	145.2435
2023	4,562.3044	214.2002	0.0000	0.0000	214.2002	214.2002
2024	5,778.9189	230.0010	0.0000	0.0000	230.0010	230.0010
2025	6,944.8412	365.2986	0.0000	0.0000	365.2986	365.2986
2026	8,060.0711	442.4979	0.0000	0.0000	442.4979	442.4979
2027	9,175.3011	520.4231	0.0000	0.0000	520.4231	520.4231
2028	10,290.5311	600.0409	0.0000	0.0000	600.0409	600.0409
2029	11,405.7610	573.9379	0.0000	0.0000	573.9379	573.9379
NOMINAL	62,148.7246	3,195.0071	0.0000	0.0000	3,195.0071	3,195.0071
NPV		2,175.7737	0.0000	0.0000	2,175.7737	2,175.7737

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK



\* WORKSHEET: UTILITY COSTS, PARTICIPANT COSTS, AND REV LOSS/GAIN  
 PROGRAM: Custom Incentives

(1)	(2)----- (3)----- (4)----- (5)----- (6)----- (7)----- (8)----- (9)----- (10)----- (11)----- (12)----- (13)----- (14)----- (15)----- (16)----- (17)----- (18)					-----> PARTICIPATING CUSTOMER COSTS & BENEFITS----->											
YEAR	UTIL NONREC. COSTS \$(000)	UTIL RECUR COSTS \$(000)	TOTAL UTIL PGM COSTS \$(000)	UTIL NONREC. REBATES \$(000)	UTIL RECUR. REBATES \$(000)	TOTAL REBATE/ INCENT. COSTS \$(000)	PARTIC. CUST EQUIP COSTS \$(000)	PARTIC. CUST O & M COSTS \$(000)	TOTAL PARTIC. CUST COSTS \$(000)	REDUCT. IN CUST. KWH (000)	RED. REV. - FUEL PORTION \$(000)	RED. REV. NONFUEL PORTION \$(000)	EFFECT. REV. REDUCT. IN BILL \$(000)	INC. IN CUST. KWH (000)	INC. REV. - FUEL PORTION \$(000)	INC. REV. NONFUEL PORTION \$(000)	EFFECT. REVENUE INC. IN BILL \$(000)
2020	32.9602	0.0000	32.9602	116.9728	0.0000	116.9728	189.9896	0.0000	189.9896	633.2985	19.0276	40.2169	59.2444	0.0000	0.0000	0.0000	0.0000
2021	33.6194	0.0000	33.6194	116.9728	0.0000	116.9728	193.7894	0.0000	193.7894	1,899.8956	61.9678	123.0637	185.0315	0.0000	0.0000	0.0000	0.0000
2022	34.2918	0.0000	34.2918	116.9728	0.0000	116.9728	197.6651	0.0000	197.6651	3,166.4927	107.9421	209.2083	317.1504	0.0000	0.0000	0.0000	0.0000
2023	32.2870	0.0000	32.2870	107.9749	0.0000	107.9749	186.1093	0.0000	186.1093	4,384.3745	154.5495	295.4664	450.0159	0.0000	0.0000	0.0000	0.0000
2024	32.9328	0.0000	32.9328	107.9749	0.0000	107.9749	189.8315	0.0000	189.8315	5,553.5411	199.7109	381.7426	581.4535	0.0000	0.0000	0.0000	0.0000
2025	30.7921	0.0000	30.7921	98.9770	0.0000	98.9770	177.4925	0.0000	177.4925	6,673.9924	247.1427	467.9361	715.0788	0.0000	0.0000	0.0000	0.0000
2026	31.4080	0.0000	31.4080	98.9770	0.0000	98.9770	181.0423	0.0000	181.0423	7,745.7284	291.8111	553.9407	845.7518	0.0000	0.0000	0.0000	0.0000
2027	32.0361	0.0000	32.0361	98.9770	0.0000	98.9770	184.6632	0.0000	184.6632	8,817.4644	344.2968	643.1983	987.4952	0.0000	0.0000	0.0000	0.0000
2028	32.6768	0.0000	32.6768	98.9770	0.0000	98.9770	188.3564	0.0000	188.3564	9,889.2004	395.4226	735.8046	1,131.2273	0.0000	0.0000	0.0000	0.0000
2029	33.3304	0.0000	33.3304	98.9770	0.0000	98.9770	192.1236	0.0000	192.1236	10,960.9364	428.5944	831.8580	1,260.4523	0.0000	0.0000	0.0000	0.0000
NOMINAL	326.3345	0.0000	326.3345	1,061.7533	0.0000	1,061.7533	1,881.0629	0.0000	1,881.0629	59,724.9244	2,250.4655	4,282.4356	6,532.9011	0.0000	0.0000	0.0000	0.0000
NPV	250.3589	0.0000	250.3589	822.9809	0.0000	822.9809	1,443.1231	0.0000	1,443.1231		1,539.5860	2,933.1866	4,472.7726		0.0000	0.0000	0.0000

\* SUPPLEMENTAL INFORMATION NOT SPECIFIED IN WORKBOOK

TOTAL RESOURCE COST TESTS  
PROGRAM: Custom Incentives

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
YEAR	INCREASED SUPPLY COSTS \$(000)	UTILITY PROGRAM COSTS \$(000)	PARTICIPANT PROGRAM COSTS \$(000)	OTHER COSTS \$(000)	TOTAL COSTS \$(000)	AVOIDED GEN UNIT BENEFITS \$(000)	AVOIDED T & D BENEFITS \$(000)	PROGRAM FUEL SAVINGS \$(000)	OTHER BENEFITS \$(000)	TOTAL BENEFITS \$(000)	NET BENEFITS \$(000)	CUMULATIVE DISCOUNTED NET BENEFITS \$(000)
2020	0.000	32.960	189.990	0.000	222.950	0.000	0.000	25.965	0.000	25.965	(196.985)	(196.985)
2021	0.000	33.619	193.789	0.000	227.409	0.000	0.000	77.399	0.000	77.399	(150.009)	(337.839)
2022	0.000	34.292	197.665	0.000	231.957	0.000	0.000	145.243	0.000	145.243	(86.713)	(414.291)
2023	0.000	32.287	186.109	0.000	218.396	0.000	0.000	214.200	0.000	214.200	(4.196)	(417.764)
2024	0.000	32.933	189.832	0.000	222.764	0.000	0.000	230.001	0.000	230.001	7.237	(412.139)
2025	0.000	30.792	177.492	0.000	208.285	0.000	0.000	365.299	0.000	365.299	157.014	(297.538)
2026	0.000	31.408	181.042	0.000	212.450	0.000	0.000	442.498	0.000	442.498	230.048	(139.878)
2027	0.000	32.036	184.663	0.000	216.699	0.000	0.000	520.423	0.000	520.423	303.724	55.570
2028	0.000	32.677	188.356	0.000	221.033	0.000	0.000	600.041	0.000	600.041	379.008	284.578
2029	0.000	33.330	192.124	0.000	225.454	0.000	0.000	573.938	0.000	573.938	348.484	482.292
NOMINAL	0.000	326.335	1,881.063	0.000	2,207.397	0.000	0.000	3,195.007	0.000	3,195.007	987.610	
NPV	0.000	250.359	1,443.123	0.000	1,693.482	0.000	0.000	2,175.774	0.000	2,175.774	482.292	
				Discount Rate:	6.50%							
				Benefit/Cost Ratio [col (11) / col (6)]:	1.28							



