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COMMISSION  
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DEAN CANNON  
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House of Representatives



August 4, 2011

Ms. Ann Cole, Commission Clerk  
Office of Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Blvd.  
Tallahassee, FL 32399-0850

Re: Docket No. 110009-EI - Public Version Direct Testimony of OPC Witness Dr. William R. Jacobs, Jr.

Dear Ms. Cole:

Enclosed for filing are the original and one copy of the redacted, public version of the Direct Testimony of William R. Jacobs, Jr., Ph.D.

A confidential version has been filed concurrently with the Commission; that version is subject to claim of confidentiality. The redactions in the public version are consistent with the confidential designations in the confidential version filed. The only redaction was made to one page of Exhibit WRJ(PEF)-3.

Parties who have made arrangements with PEF to receive confidential information have already received the confidential version by separate service.

Please indicate the time and date of receipt on the enclosed duplicate of this letter and return it to our office.

Sincerely,

Charles J. Rehwinkel  
Deputy Public Counsel

cc: All parties of record

- COM 5
- APA 1
- OCR 6
- GCL 1
- RAD 1
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DOCUMENT NUMBER-DATE

05510 AUG-4 =

FPSC-COMMISSION CLERK

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

In Re: Nuclear Cost Recovery )  
Clause )  
\_\_\_\_\_ )

Docket No. 110009-EI

FILED: July 8, 2011

**(PUBLIC VERSION)**

**DIRECT TESTIMONY**

**OF**

**WILLIAM R. JACOBS, JR., Ph.D.**

**ON BEHALF OF THE CITIZENS OF**

**THE STATE OF FLORIDA**

**REVIEW OF PROGRESS ENERGY FLORIDA'S  
NUCLEAR COST RECOVERY RULE FILING**

DOCUMENT NUMBER-DATE

05510 AUG-4 =

FPSC-COMMISSION CLERK

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SCENARIO ANALYSIS FOR PROGRESS ENERGY FLORIDA..... WRJ(PEF)-5

1 **DIRECT TESTIMONY**

2 **Of**

3 **WILLIAM R. JACOBS JR., Ph.D.**

4 On Behalf of the Office of Public Counsel

5 Before the

6 Florida Public Service Commission

7 Docket No. 110009-EI

8  
9 **I. INTRODUCTION**

10 **Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.**

11 A. My name is William R. Jacobs, Jr., Ph.D. I am a Vice President of GDS Associates,  
12 Inc. My business address is 1850 Parkway Place, Suite 800, Marietta, Georgia,  
13 30067.

14  
15 **Q. DR. JACOBS, PLEASE SUMMARIZE YOUR EDUCATIONAL  
16 BACKGROUND AND EXPERIENCE.**

17 A. I received a Bachelor of Mechanical Engineering in 1968, a Master of Science in  
18 Nuclear Engineering in 1969 and a Ph.D. in Nuclear Engineering in 1971, all from  
19 the Georgia Institute of Technology. I am a registered professional engineer and a  
20 member of the American Nuclear Society. I have more than thirty years of  
21 experience in the electric power industry including more than twelve years of power  
22 plant construction and start-up experience. I have participated in the construction and  
23 start-up of seven power plants in this country and overseas in management positions  
24 including start-up manager and site manager. As a loaned employee at the Institute of  
25 Nuclear Power Operations ("INPO"), I participated in the Construction Project

1 Evaluation Program, performed operating plant evaluations and assisted in the  
2 development of the Outage Management Evaluation Program. Since joining GDS  
3 Associates, Inc. in 1986, I have participated in rate case and litigation support  
4 activities related to power plant construction, operation and decommissioning. I have  
5 evaluated nuclear power plant outages at numerous nuclear plants throughout the  
6 United States. I am currently on the management committee of Plum Point Unit 1, a  
7 650 MWe coal fired power plant under construction near Osceola, Arkansas. As a  
8 member of the management committee, I assist in providing oversight of the  
9 Engineering, Procurement and Construction (“EPC”) contractor for this project. I am  
10 currently the Georgia Public Service Commission’s (“GPSC”) Independent  
11 Construction Monitor for Georgia Power Vogtle 3 and 4 nuclear project. As the  
12 Independent Construction Monitor, I assist the GPSC Commissioners and Staff in  
13 providing regulatory oversight of the project. My monitoring activities include  
14 regular meetings with project management personnel and regular visits to the Vogtle  
15 plant site to monitor construction activities and assess the project schedule and  
16 budget. My resume is included as Exhibit WRJ(PEF)-1.

17  
18 **Q. WERE YOU ASSISTED BY OTHER GDS PERSONNEL IN THIS EFFORT?**

19 A. Yes I was. The GDS team involved in the review and evaluation of the requests for  
20 authorization to recover costs consisted of me and Mr. James P. McGaughy, Jr., a  
21 former nuclear utility executive with over 37 years of experience. The resume of Mr.  
22 McGaughy is attached to this testimony as Exhibit WRJ(PEF)-2. I have reviewed the  
23 work of Mr. McGaughy and am familiar with his input and have incorporated and  
24 adopted it as my own.

1 **Q. WHAT IS THE NATURE OF YOUR BUSINESS?**

2 A. GDS Associates, Inc. (“GDS”) is an engineering and consulting firm with offices in  
3 Marietta, Georgia; Austin, Texas; Corpus Christi, Texas; Manchester, New  
4 Hampshire; Madison, Wisconsin; and Auburn, Alabama. GDS provides a variety of  
5 services to the electric utility industry including power supply planning, generation  
6 support services, rates and regulatory consulting, financial analysis, load forecasting  
7 and statistical services. Generation support services provided by GDS include fossil  
8 and nuclear plant monitoring, plant ownership feasibility studies, plant management  
9 audits, production cost modeling and expert testimony on matters relating to plant  
10 management, construction, licensing and performance issues in technical litigation  
11 and regulatory proceedings.

12

13 **Q. WHOM ARE YOU REPRESENTING IN THIS PROCEEDING?**

14 A. I am representing the Florida Office of Public Counsel (“OPC”) who represents the  
15 ratepayers of Progress Energy Florida (“PEF” or “Company”).

16

17 **Q. WHAT WAS YOUR ASSIGNMENT IN THIS PROCEEDING?**

18 A. I was asked to assist the OPC to conduct a review and evaluation of requests by PEF  
19 for authority to collect historical and projected costs associated with the Extended  
20 Power Uprate (“EPU”) project being pursued at Crystal River Unit 3 (“CR3”), and  
21 historical and projected costs associated with PEF’s Levy County Units 1 and 2  
22 project (“LNP”) through the capacity cost recovery clause.

1 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

2 A. Yes. I testified on behalf of the Florida Office of Public Counsel in the previous  
3 NCRC proceedings in Dockets Nos. 080009-EI, 090009-EI and 100009-EI.

4  
5 **Q. PLEASE SUMMARIZE PEF'S REQUEST FOR COST RECOVERY IN THIS**  
6 **DOCKET UNDER THE NUCLEAR COST RECOVERY CLAUSE.**

7 A. The total estimated revenue requirements for the CR3 EPU project are \$13.3 million  
8 for 2011 with projected total revenue requirements of \$22.7 million in 2012. For the  
9 LNP Project, PEF is requesting total revenue requirements to be collected in 2011 of  
10 \$81 million and projecting total revenue requirements of \$135.4 million in 2012.

11

12 **II. METHODOLOGY**

13 **Q. PLEASE DESCRIBE THE METHODOLOGY THAT YOU USED TO**  
14 **REVIEW AND EVALUATE THE REQUESTS FOR AUTHORIZATION TO**  
15 **COLLECT COSTS SUBMITTED BY PEF UNDER THE NUCLEAR COST**  
16 **RECOVERY CLAUSE.**

17 A. I first reviewed the Company's filings in this docket and assisted in the issuance of  
18 numerous interrogatories and requests for production of documents. To evaluate the  
19 issues related to project schedule, cost and risk management, I reviewed many  
20 internal documents, status reports and correspondence with regulatory authorities. I  
21 reviewed responses to discovery requests and issued additional discovery requests as  
22 needed. I attended the depositions of Mr. Franke related to CR3 and Mr. Elnitsky  
23 related to the LNP.

1 **Q. WERE YOU ASKED BY THE OPC TO MAKE ANY ASSESMENT OF, OR**  
2 **PROVIDE ANY JUDGEMENT ABOUT, THE ADEQUACY OF PEF'S**  
3 **PROJECT MANAGEMENT AND COST CONTROLS?**

4 A. No. Due to the time constraints of this docket this year, I was not asked to focus my  
5 efforts in that area. So I offer no opinions as to the adequacy of these efforts.

6

7 **III. SUMMARY OF RECOMMENDATIONS**

8 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING THE**  
9 **CRYSTAL RIVER 3 EPU PROJECT?**

10 A. The Commission should not approve 2009 and 2010 CR3 EPU costs as prudent due  
11 to the uncertainty of the impact of other prudence determinations of PEF's activities  
12 related to the delamination of the Containment Building.

13

14 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING THE**  
15 **LEVY NUCLEAR PROJECT?**

16 A. The following is a summary of my recommendations related to the LNP project:

17 1. Only costs necessary to support processing the Combined Operating License  
18 Application ("COLA") should be recovered from the customers in 2011 and 2012.

19 2. No transmission or transmission related costs (land acquisition, studies,  
20 engineering designs, etc.) should be recovered from the customers in 2011 and  
21 2012.

22 3. All preconstruction and construction costs not directly associated with pursuing  
23 the Combined License ("COL") should be deferred or determined to be  
24 unreasonable at this time.



1 4. PEF's request for accelerated recovery of the remaining deferred balance should  
2 be denied.

3 5. To further minimize ratepayer impact in 2012, the costs associated with  
4 negotiating the Final Notice to Proceed ("FNTP") or further amendments to the  
5 EPC contract should be deferred for consideration for recovery until after the  
6 receipt of the LNP COL.

7 6. PEF should have the burden of affirmatively demonstrating that it is not  
8 considering further delays in the scheduled LNP Commercial Operation Date  
9 ("COD").

10  
11 **IV. THE CRYSTAL RIVER 3 EPU PROJECT**

12 **Q. PLEASE BRIEFLY DESCRIBE THE CRYSTAL RIVER UNIT 3 EXTENDED**  
13 **POWER UPRATE PROJECT.**

14 A. As I described in my testimony last year, the CR3 Extended Power Uprate project is  
15 supposed to add a total of 180 MWe to the existing plant. This would be  
16 accomplished by increasing reactor power output and thus steam output, increasing  
17 the size and efficiency of the steam turbine and generator and increasing the accuracy  
18 of instrumentation in the plant's steam system. The project was planned to be carried  
19 out in three phases. Phase 1 improved the steam plant measurement accuracy of  
20 process parameters and allowed the power output to be increased by about 12 MWe.  
21 These improvements were made in 2007 and were placed in service on January 31,  
22 2008.

23 According to the initial plans, Phase 1 was to be followed by a Phase 2 that  
24 would increase the capacity and efficiency of the turbine-generator and other non-  
25 nuclear parts of the plant in a 2009 outage. This would make the plant more efficient

1 and allow it to receive the 15.5% increase in steam flow that would become available  
2 after the reactor upgrade planned for a Phase 3 to be implemented in a 2011 outage.  
3 The efficiency increases in Phase 2 would increase the output 28 MWe, while using  
4 only the current steam flow. Phase 3 would increase output by increasing reactor  
5 power and steam flow adding 140 MWe for a total uprate of 180 MWe. The initial  
6 plan has been modified because of two unplanned occurrences:

- 7 • The new low pressure turbines failed testing in the manufacturer's German  
8 facilities necessitating repair and modification.
- 9 • The reactor containment building was damaged during the 2009 outage to replace  
10 the steam generators. The steam generators are very large components for which  
11 PEF made the decision to cut a large hole in the side of the cylindrical, concrete  
12 containment structure, rather than utilizing the available equipment hatch. In the  
13 process, the concrete separated from the rebar necessitating extensive analysis,  
14 redesign and repair.

15  
16 **Q. WHAT IS THE CURRENT STATUS OF THE PROJECT?**

17 A. The CR3 nuclear plant continues to be in an extended outage due to the damaged  
18 Containment Building. During the retensioning of the Containment Building, a  
19 second delamination occurred. The Company has evaluated various repair options  
20 along with retirement of the unit. On June 27, 2011 the Company filed a status report  
21 with the Commission in Docket No. 100437 EI announcing its decision to attempt a  
22 repair to the unit and provided an initial, preliminary estimated cost of between \$900  
23 million and \$1.3 billion and an estimated return to service date of 2014.

1 **Q. DOES THE DECISION TO ATTEMPT A REPAIR TO THE UNIT**  
2 **ELIMINATE THE UNCERTAINTY CONCERNING THE FUTURE**  
3 **OPERATION OF THE UNIT?**

4 A. No, it does not. The decision to attempt a repair to the unit removes uncertainty of  
5 whether the unit will be retired at this time. However, the remaining uncertainties  
6 related to the repair option are extensive.

7

8 **Q. PLEASE EXPLAIN.**

9 A. Notwithstanding the Company's optimism, there are tremendous uncertainties about  
10 the future of the CR3 Containment Building. These range from whether the  
11 Company can successfully repair the building for return to service by 2014 to whether  
12 the Containment Building can be repaired at all. Repair of a post tensioned  
13 containment building involving removal and replacement of most of the original  
14 concrete as planned for CR3 has never been done. This is truly uncharted territory.  
15 Assuming that the building can be successfully repaired, the uncertainties related to  
16 the ultimate cost and schedule are also extremely large. At this time, there is no way  
17 to know with any accuracy how long the repair will take and how much it will cost.  
18 The Company's initial estimate of \$900 million to \$1.3 billion and return to service in  
19 2014 is very preliminary and, as stated by the Company, could be affected by  
20 regulatory reviews, ultimate work scope, engineering designs, testing, weather and other  
21 developments. Another uncertainty is the licensability of the repaired containment  
22 building. Once the building has been repaired, it is unclear if the NRC will be able to  
23 license the plant for continued operation. In summary, at this time, PEF does not  
24 know if the containment building can be repaired and, if it can be repaired, how long  
25 it will take and how much it will cost. On July 1, 2011, PEF filed a motion seeking

1 that its request for recovery in 2012 of 2011 and 2012 costs be deferred from  
2 consideration in the August 2011 NCRC hearing. This is consistent with the  
3 uncertainty surrounding the CR3 EPU project.

4  
5 **Q. WHAT APPROACH ARE YOU TAKING IN YOUR TESTIMONY IN LIGHT**  
6 **OF THE PEF MOTION?**

7 A. In reliance upon that Motion (and what I understand to be the OPC's likely position  
8 on the essence of the Motion), I will not address the substantive issues related to cost  
9 recovery for the 2011 and 2012 years. I will briefly address the pending Commission  
10 determinations relating to 2009 and 2010 periods as they relate to the pending and  
11 expected prudence determinations in Docket No. 100347-EI and any other separate  
12 case where prudence determinations related to the delamination(s) are to be made by  
13 the Commission.

14  
15 **Q: SHOULD THE COMMISSION APPROVE 2009 & 2010 CR3 EPU COSTS AS**  
16 **BEING PRUDENT?**

17 A: No. Due to uncertainty surrounding the prudence of PEF's activities related to the  
18 delamination of the CR3 Containment Building, the Commission should not make  
19 any final prudence determination related to EPU costs incurred after October 2, 2009.  
20 There is no need for the Commission to reach such a determination while the  
21 delamination prudence case is pending. Furthermore, the Commission should take  
22 note of the fact that the October 22, 2009 (Rev. 2) Integrated Project Plan ("IPP")  
23 authorizing certain expenditures in 2010 and beyond, was approved after the  
24 delamination was discovered on October 2, 2009. Until there is a final understanding  
25 of what was known by PEF at the time post-delamination expenditures were made

1 and without a full understanding or appreciation of the legal implications of a  
2 prudence determination in this docket on the Commission’s available remedies in  
3 other prudence determinations docket(s), no EPU costs incurred after October 2, 2009  
4 should receive final approval or be determined to be prudent.

5  
6 **V. THE LEVY NUCLEAR PROJECT**

7 **Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE RECENT HISTORY OF**  
8 **THE LEVY NUCLEAR PROJECT FOR THE COMMISSION.**

9 A. As I described in my prior testimony, on December 31, 2008 PEF signed an EPC  
10 contract with the Westinghouse – Shaw consortium (Consortium) to design and  
11 construct two AP1000 nuclear power plants at the Levy County site. Consistent with  
12 the testimony in the 2008 need determination, the projected COD’s for these two  
13 units at that time was the summer of 2016 for the first unit and the summer of 2017  
14 for the second unit at an estimated cost of \$17.2 billion, including Allowance for  
15 Funds Used During Construction (“AFUDC”).<sup>1</sup> The project schedule which formed  
16 the basis for the EPC agreement was predicated on the project receiving a Limited  
17 Work Authorization (“LWA”) from the NRC. The LWA would have allowed certain  
18 safety related work to proceed before the project was issued its COL.

19 Approximately three weeks after executing the EPC contract, the Company  
20 received notification from the NRC that the anticipated schedule for NRC approval of  
21 the requested LWA would not be possible due primarily to the complex geology at  
22 the Levy County site. Upon receipt of this notification, the EPC contract – executed  
23 just three weeks before – was no longer viable. Instead of cancelling the EPC, on  
24 May 1, 2009, the Company announced a schedule shift of at least 20 months for the

---

<sup>1</sup> See Order No. PSC-11-0095-FOF-EI at 22.

1 Levy project. The Company issued a letter to the Consortium requesting the  
2 Consortium to conduct six schedule and cash flow analyses for the project (See  
3 Exhibit WRJ(PEF)-3). The results of these analyses formed the basis for the  
4 Company's announced plan going forward for the Levy Nuclear Project with  
5 projected COD's of 2021 and 2022 at an estimated cost of \$22.5 billion, including  
6 AFUDC.<sup>2</sup>

7  
8 **Q. IN YOUR OPINION, IS PEF COMMITTED TO COMPLETION OF THE**  
9 **LEVY NUCLEAR PROJECT?**

10 A. Notwithstanding Mr. Elnitsky's frequent deposition reference to completion of the  
11 LNP as PEF's "program of record," in my opinion PEF's actions demonstrate that its  
12 internal resolve to complete the LNP appears to be weakening. I base my opinion on  
13 a number of factors as discussed below:

14 **1. MANAGEMENT ATTENTION OF KEY PEF MANAGERS IS BEING DIVERTED TO**  
15 **OTHER ACTIVITIES.**

16 Unlike NCRC proceedings in prior years, Mr. Jeff Lyash, the PEF officer  
17 responsible for the Levy Nuclear Project has failed to provide any direct  
18 testimony in support of the LNP. Ms. Sue Hardison, the LNP contract  
19 administrator has been reassigned to presumably more pressing PEF projects  
20 while retaining some LNP responsibility. Mr. John Elnitsky, the PEF Vice  
21 President directly responsible for development of the LNP, has been assigned  
22 more responsibility within Progress Energy for all generation construction and  
23 all major projects in 2010 and presumably increased responsibilities for the  
24 CR3 return to service. (See June 17, 2011, Elnitsky deposition transcript at

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<sup>2</sup> See Order No. PSC-11-0095-FOF-EI at 22.

1 p.14; March 1, 2011, Elnitsky testimony at p. 1). With the LNP on hold  
2 except for activities related to the COL, he and the other members of the LNP  
3 team are presumably being retasked to focus on other more pressing projects.  
4 These changes demonstrate a lessening of the significance of the project to  
5 Progress Energy.

## 6 **2. FEASIBILITY/COST-EFFECTIVENESS OF THE LNP PROJECT.**

7 PEF touts the 2011 version of the feasibility analysis filed in the testimony of  
8 John Elnitsky and contained in the March 2011 LNP IPP as demonstrating  
9 that the LNP project is favorable or cost effective in more cases than not.  
10 However, when the 2011 Cumulative Present Value Revenue Requirement  
11 (“CPVRR”) analysis is compared with the 2010 CPVRR analysis contained in  
12 Commission Order No. PSC-11-0095-FOF-EI at pp. 23-24, the 2011 CPVRR  
13 analysis demonstrates that the project is unfavorable and not cost effective in  
14 more cases this year. It is important to note that the fuel sensitivity cases  
15 where the LNP remains cost effective (mid fuel, high fuel, and carbon  
16 regulation) are trending unfavorably according to PEF’s own enterprise risk  
17 analysis. The decline in cost effectiveness demonstrates that this trend was  
18 not ignored by the senior management of Progress Energy as demonstrated by  
19 the extensive, formal scenario planning effort (discussed below) which the  
20 Company undertook last year but did not reveal to the Commission until after  
21 the 2010 hearing.

## 22 **3. INCREASED ENTERPRISE RISKS**

23 In his discussion of enterprise risks, Mr. John Elnitsky concludes:

24 While we have noticed a few favorable or slightly  
25 favorable trends in the LNP enterprise risks, most  
26 enterprise risks remain neutral compared to our  
27 evaluation last year, and there are a couple of

1 unfavorable trends that we are watching closely to  
2 determine if they represent fundamental changes in  
3 the project enterprise risks.  
4 (Elnitsky May 2, 2011, Direct Testimony, page 27,  
5 lines 14 – 18)  
6

7 The two enterprise risks with unfavorable trends are related to the lack of  
8 legislation for greenhouse gas legislation and lower natural gas prices. Both  
9 of these risks are fundamental drivers in the economic feasibility of the LNP.  
10 In my opinion, given the importance of these two variables in the overall  
11 economics of nuclear power, the unfavorable trend in these two enterprise  
12 risks demonstrates an overall unfavorable trend in enterprise risks.

#### 13 **4. LACK OF JOINT OWNERS (JO)**

14 Joint ownership does not appear to be any more likely in 2011 than in prior  
15 years. While PEF has indicated that they have continued to seek potential  
16 joint owners, merely meeting with three potential JO in two years does not  
17 constitute progress in this area. In fact, circumstances listed below  
18 demonstrate no foreseeable receipt of JO anytime soon, if ever:

- 19 • The increased estimated total project cost;
- 20 • Possible delays in the receipt of AP1000 DCD and LNP COL;
- 21 • Lack of a NCRC statute to guarantee recovery for any non-IOU JO  
22 partners if the project was canceled;
- 23 • The announced change to the COD from 2016 to no sooner than 2021;
- 24 • Possible future changes to the COD beyond 2021;



- 1                   • A recent statement in the media by Progress Energy’s spokesman on  
2                   nuclear matters that no final decision has been made to build LNP.<sup>3</sup>  
3                   (See Exhibit WRJ(PEF)-4 )

4                   **5. DIMINISHED PUBLIC SUPPORT**

5                   Public support for the LNP and new nuclear power construction in general  
6                   appears to be declining due to several recent events. These events include:

- 7                   • The Fukushima accident – the intense negative publicity due to the  
8                   extensive damage and radiation releases at the Fukushima plant in  
9                   Japan have decreased public acceptance of nuclear power in general;
- 10                  • CR3 publicity – the situation at CR3 related to the damaged  
11                  Containment Building and the possibility that the plant may be retired  
12                  after spending hundreds of millions of dollars in the uprate project has  
13                  received extensive local press attention.
- 14                  • NRC questions about the AP1000 Design – recent questions by the  
15                  NRC on the AP1000 design and associated potential to delay  
16                  certification of the AP1000 design.
- 17                  • Flooding at the Ft. Calhoun nuclear power plant – dramatic pictures  
18                  showing the floodwaters surrounding the Ft. Calhoun nuclear power  
19                  plant and fears that the plant could have flooded with catastrophic  
20                  consequences.

21                  **6. PLANNING SCENARIOS**

22                  PEF’s extensive, methodical and senior executive level analysis of planning  
23                  scenarios indicate that PEF is seriously studying the possibility of further  
24                  delaying the LNP and relying primarily on gas generation in the current

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<sup>3</sup> “Maligned nuclear power fights to remain a U.S. option” By Robert Trigaux, Times Business Columnist, May 27, 2011.

1 resource planning horizon. These scenario planning activities appear to  
2 demonstrate PEF's effort to do realistic planning about what actual resources  
3 will be deployed to meet customer growth and demand in the increasingly  
4 likely event that the LNP project is not pursued on the current schedule.

5  
6 **Q. WHAT IS THE SIGNIFICANCE OF THE COMPANY'S VARIOUS**  
7 **PLANNING SCENARIOS?**

8 A. As mentioned above and extensively in Witness Elnitsky's June 17, 2011 deposition  
9 testimony, scenario planning is an important analytical tool used by the Company to  
10 do realistic planning about its resources. Attached to my testimony is an exhibit  
11 which contains the August 23, 2010, SMC Strategic Planning Retreat Scenario  
12 Analysis for Progress Energy Florida (Exhibit WRJ(PEF)-5). Although the  
13 presentation about various planning scenarios is heavily redacted, it demonstrates  
14 PEF's realistic consideration of the possibility of a change to the COD's for Levy 1 &  
15 2. Of the scenarios considered, the Moderate Change scenario appears to be the most  
16 likely scenario with 2027 and 2029 COD's for Levy 1 & 2. This reasonable  
17 assumption about the Moderate Change scenario is based on several factors: 1) the  
18 location of the Moderate Change scenario within the presentation; 2) its frequent  
19 comparison with the March 2010 "program of record" scenario throughout the  
20 presentation; 3) the number of completely redacted pages immediately following the  
21 comparison with the March 2010 "program of record"; 4) the relative similarity of it  
22 to the March 2010 "program of record" scenario; and 5) the relative reasonableness of  
23 this scenario compared with the other scenarios discussed in the presentation. While  
24 there are other planning scenarios discussed in the August 23, 2010 presentation,  
25 those scenarios in my opinion are less likely than the Moderate Change scenario.

1 **Q. IN YOUR OPINION, IS THE PROPOSED MERGER WITH DUKE ENERGY**  
2 **NECESSARILY A POSITIVE DEVELOPMENT FOR COMPLETION OF**  
3 **THE LNP?**

4 A. No, the proposed merger with Duke Energy is not necessarily a positive development  
5 for completion of the LNP. As noted on page 28 of Mr. Elnitsky's May 2, 2011  
6 testimony, the Duke-Progress merger may bring an influx of cash and access to  
7 capital to the merged companies and benefit Progress Energy in general; however, the  
8 merger has not been consummated. Moreover, there is no guarantee that the Florida-  
9 based LNP will remain a focus of the merged companies or whether PEF will remain  
10 a core component of the merged companies largely centered in the Carolinas. The  
11 effects of the merger on the LNP and PEF will remain largely unknown until after the  
12 merger is consummated and it may be some time before the merged companies'  
13 position on either LNP or PEF are clearly known. While an improved balance sheet  
14 of the merged entities may have some marginal impact on the theoretical viability of  
15 the LNP project, there has been no overt signal from credit rating agencies that they  
16 would not consider a downgrade for the merged entity when the overall economics of  
17 LNP have not improved relative to the enterprise risks of natural gas prices and  
18 greenhouse gas legislation and the uncertainties that remain about the future of the  
19 CR3 unit.

20  
21 **Q. WHAT IS YOUR RECOMMENDATION CONCERNING PEF'S REQUEST**  
22 **TO RECOVER COSTS RELATED TO LNP IN 2011 AND 2012?**

23 A. I recommend that only costs strictly necessary to support processing the COLA  
24 should be recovered from the customers in 2011 and 2012. As discussed in my  
25 testimony, the reason for this is my overall conclusion that there is significant doubt

1 about the ultimate completion, or timely COD, of the LNP. Specifically, reasons for  
2 my conclusion include: (1) the lack of a firm commitment to the completion of the  
3 project beyond the COL receipt; (2) increasing indicators of dormancy and lack of  
4 interest in pursuing the project beyond the COL receipt; (3) no foreseeable  
5 subscription by, or even interest from, joint owners; and (4) an active, formal and  
6 serious scenario planning process that appears to be looking at a target COD of 2027  
7 and 2029.

8 While the Commission may have found PEF meets the minimum test set out  
9 in the 2010 NCRC order of “demonstrating an intent to build,” PEF’s actions  
10 continue to demonstrate doubt as to the likelihood of completion of the project on the  
11 current schedule – if at all. For this reason, customers should not be forced to bear  
12 any of the costs beyond that needed to meet PEF’s Commission-endorsed goal of  
13 spending hundreds of millions of dollars to receive the COL before then deciding  
14 where to go next.

15 In light of the Commission’s endorsement of the Company’s proposed  
16 approach in the 2010 NCRC hearing, the Commission should tightly scrutinize all  
17 LNP costs and only allow actual COLA-necessary costs to be recovered from the  
18 customer and either defer all non-COLA costs to a later date or determine they are  
19 unreasonable at this time. No transmission or transmission related costs (land  
20 acquisition, studies, engineering designs, etc.) should be authorized for recovery in  
21 2011 and 2012. All preconstruction and construction costs not directly attributed to  
22 achieving the COL should be deferred or determined to be unreasonable at this time.  
23 To further minimize ratepayer impact in 2012, the costs associated with negotiating  
24 the FNTP or further amendments to the EPC contract should be deferred for  
25 consideration for recovery until after the receipt of the LNP COL.

1 **Q. IN YOUR OPINION, DO THE FACTS AND CIRCUMSTANCES RELATING**  
2 **TO THE LNP PROJECT “DEMONSTRATE AN INTENT” TO BUILD THE**  
3 **LNP ON THE CURRENT SCHEDULE?**

4 A. While I understand that the Commission made a finding in last year’s docket that PEF  
5 had demonstrated an intent to build the plant sufficient for PEF to continue charging  
6 customers in advance of the LNP COD, the perceived overall weakening in 2011 of  
7 PEF’s and Progress Energy’s resolve to build the project on the current timeline is  
8 troubling to me. As described in my testimony, the facts and circumstances taken as  
9 a whole cause me concern and they should cause the Commission concern.  
10 Especially troubling is the formal scenario planning that PEF is doing while publicly  
11 maintaining that it intends to complete the LNP by 2021 and 2022. If PEF is  
12 seriously considering constructing the plant – if at all – to meet a COD of 2027 and  
13 2029, then it is my opinion that PEF is not realistically demonstrating an intent to  
14 build the LNP within a reasonable time frame. The Commission should require  
15 further testimony and impose the burden of proof of an affirmative demonstration by  
16 PEF that the Company is not considering further delays in the project. Otherwise, I  
17 believe that PEF may not be meeting the Commission’s standard for maintaining  
18 eligibility for advanced cost recovery under Section 366.93, F.S.

19  
20 **Q. ARE YOU SAYING THAT PEF SHOULD NOT BE ABLE TO RECOVER**  
21 **COSTS THAT THEY HAVE SPENT IN RELIANCE ON THE**  
22 **COMMISSION’S APPROVAL OF THE COL-RECEIPT APPROACH?**

23 A. No, I am not saying that. The Commission has made its determination in PEF’s favor  
24 for the COL-receipt approach. Absent evidence that the Commission was misled by  
25 the Company about its intent to complete the LNP, PEF can reasonably rely on that

1 determination as long as the Company can affirmatively demonstrate by a totality of  
2 the facts and circumstances that it intends to build the LNP by 2021 and 2022. This  
3 affirmative demonstration is necessary for the Commission to exercise some real-time  
4 and forward looking monitoring of a project that has reached the \$1 billion mark and  
5 is on its way to an ultimately customer borne overall cost of between \$22-25 billion  
6 or more. As it stands today, the customers are on the hook for all of the \$1 billion  
7 whether the plant ever enters commercial service. If the Commission only makes  
8 reactive, after-the fact determinations of prudence, customers will be obligated to pay  
9 even more as doubts persist or increase. The Commission should be flexible to the  
10 evolving circumstances of large nuclear construction projects and exercise all of its  
11 regulatory authority to protect customers from increased costs in times of increased  
12 uncertainty.

13  
14 **Q. WHAT IS OPC'S POSITION CONCERNING ACCELERATED RECOVERY**  
15 **OF THE DEFERRED BALANCE AS RECOMMENDED BY MR. FOSTER?**

16 A. OPC objects to accelerated recovery of the remaining deferred balance. PEF is  
17 requesting accelerated recovery of \$115 million plus \$15.1 million in carrying  
18 charges associated with the remaining deferred balance which was authorized by  
19 Order No. PSC-09-0783-FOF-EI, p. 38. Order No. PSC-09-0783-FOF-EI permits  
20 PEF "greater flexibility to manage rates" and allows PEF "to annually reconsider  
21 changes to the deferred amount and recovery schedule...." However, the Commission  
22 retains jurisdiction on whether to allow PEF to accelerate recovery of the deferred  
23 amount. By Order No. PSC-09-0783-FOF-EI, the Commission approved a deferral  
24 amount of \$273,889,606. Recovery, of that deferred amount started in 2010 and is  
25 scheduled to end in 2014. PEF is two years into a five year rate mitigation plan, and

1 is now seeking to accelerate recovery of the deferred amount and collect the  
2 remaining deferred balance in one year. This accelerated recovery in one year would  
3 adversely affect PEF's customers. In these trying economic times for PEF's  
4 customers, PEF should not be allowed to accelerate the recovery of this deferred  
5 amount. In addition, PEF's intent to recover the remaining deferred balance in 2012  
6 may indicate that Progress Energy is not committed to the LNP as discussed above. It  
7 may indicate that Progress Energy may consider cancelling the LNP project once all  
8 the outstanding monies approved for recovery for the LNP have been recovered from  
9 the customer. In other words, PEF may not wish to cancel the LNP at this time while  
10 there are millions of dollars remaining to be recovered.

11  
12 **Q. PLEASE SUMMARIZE YOUR REASONS FOR OBJECTING TO**  
13 **ACCELERATED RECOVERY OF THE DEFERRED BALANCE.**

14 A. In light of the lack of a demonstrable improved likelihood of the LNP being built in a  
15 reasonable timeframe – if at all – I fundamentally do not believe it is reasonable for  
16 customers' bills to be any higher than absolutely necessary. Therefore I recommend  
17 against allowing PEF to accelerate the recovery of the deferred recovery amount.  
18 Further reasons for not allowing the accelerated recovery are due to customers  
19 already paying in rates for the following:

- 20 • The CR3 replacement steam generators' related revenue requirement. The  
21 revenue requirement associated with these assets was included in base rates,  
22 beginning January 1, 2010, even though the steam generators have not gone  
23 into service due to the extended outage at CR3 caused by engineering and  
24 construction activities overseen by PEF;

- 1           • Replacement power costs for the extended outage at CR3 caused by
- 2           engineering and construction activities overseen by PEF; and
- 3           • Costs for the LNP plant which contribute nearly \$5 per month to the
- 4           residential bill.

5           Since customers are already incurring costs for both CR3 and LNP with no  
6           foreseeable benefit to the customer in the near future, the Commission should not  
7           allow the Company to recover the accelerated portion of its requested NCRC costs  
8           and should reduce the requested amount accordingly.

9

10       **VI.   RECOMMENDATIONS**

11   **Q.   PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING THE**  
12   **CRYSTAL RIVER 3 EPU PROJECT?**

13   A.   The Commission should not approve 2009 and 2010 CR3 EPU costs as prudent due  
14   to the uncertainty of the impact of other prudence determinations of PEF's activities  
15   related to the delamination of the Containment Building.

16

17   **Q.   PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING THE**  
18   **LEVY NUCLEAR PROJECT?**

19   A.   The following is a summary of my recommendations related to the LNP project:

- 20           1. Only costs necessary to support processing the COLA should be recovered
- 21           from the customers in 2011 and 2012.
- 22           2. No transmission or transmission related costs (land acquisition, studies,
- 23           engineering designs, etc.) should be recovered from the customer in 2011 and
- 24           2012.



- 1           3. All preconstruction and construction costs not directly associated with  
2           pursuing the COL should be deferred or determined to be unreasonable at  
3           this time.
- 4           4. PEF's request for accelerated recovery of the remaining deferred balance  
5           should be denied.
- 6           5. To further minimize ratepayer impact in 2012, the costs associated with  
7           negotiating the FNTP or further amendments to the EPC contract should be  
8           deferred for consideration for recovery until after the receipt of the LNP  
9           COL.
- 10          6. PEF should have the burden of affirmatively demonstrating that it is not  
11          considering further delays in the scheduled LNP COD.

12

13 **Q. DOES THAT CONCLUDE YOUR TESTIMONY?**

14 **A.** Yes, it does.

**DOCKET NO. 110009-EI**  
**CERTIFICATE OF SERVICE**

I HEREBY CERTIFY that a copy of the foregoing **DIRECT TESTIMONY AND EXHIBITS OF WILLIAM R. JACOBS, JR. Ph.D. (Public Version)** has been furnished by U.S. Mail to the following parties on this 4<sup>th</sup> day of August, 2011.

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Charles J. Rehwinkel  
Deputy Public Counsel

William R. Jacobs, Jr.  
Vice President - Generation Support Services

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**EDUCATION:** Ph.D., Nuclear Engineering, Georgia Tech 1971  
MS, Nuclear Engineering, Georgia Tech 1969  
BS, Mechanical Engineering, Georgia Tech 1968

**ENGINEERING REGISTRATION:** Registered Professional Engineer

**PROFESSIONAL MEMBERSHIP:** American Nuclear Society

**EXPERIENCE:**

Dr. Jacobs has over thirty-five years of experience in a wide range of activities in the electric power generation industry. He has extensive experience in the construction, startup and operation of nuclear power plants. While at the Institute of Nuclear Power Operation (INPO), Dr. Jacobs assisted in development of INPO's outage management evaluation group. He has provided expert testimony related to nuclear plant operation and outages in Texas, Louisiana, South Carolina, Florida, Wisconsin, Indiana, Georgia and Arizona. He currently provides nuclear plant operational monitoring services for GDS clients. Dr. Jacobs was a witness in nuclear plant certification hearings in Georgia for the Plant Vogtle 3 and 4 project on behalf of the Georgia Public Service Commission and in South Carolina for the V.C. Summer 2 and 3 projects on behalf of the South Carolina Office of Regulatory Staff. His areas of expertise include evaluation of reactor technology, EPC contracting, risk management and mitigation, project cost and schedule. He is assisting the Florida Office of Public Counsel in monitoring the development of four new nuclear units in the State of Florida, Levy County Units 1 and 2 and Turkey Point Units 6 and 7. He has been selected by the Georgia Public Service Commission as the Independent Construction Monitor for Georgia Power Company's new AP1000 nuclear power plants, Plant Vogtle Units 3 and 4. He has assisted the Georgia Public Service Commission staff in development of energy policy issues related to supply-side resources and in evaluation of applications for certification of power generation projects and assists the staff in monitoring the construction of these projects. He has also assisted in providing regulatory oversight related to an electric utility's evaluation of responses to an RFP for a supply-side resource and subsequent negotiations with short-listed bidders. He has provided technical litigation support and expert testimony support in several complex law suits involving power generation facilities. He monitors power plant operations for GDS clients and has provided testimony on power plant operations and decommissioning in several jurisdictions. Dr. Jacobs represents a GDS client on the management committee of a large coal-fired power plant currently under construction. Dr. Jacobs has provided testimony before the Georgia Public Service Commission, the Public Utility Commission of Texas, the North Carolina Utilities Commission, the South Carolina Public Service Commission, the Iowa State Utilities Board, the Louisiana Public Service Commission, the Florida Public Service Commission, the Indiana

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Vice President - Generation Support Services

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Regulatory Commission, the Wisconsin Public Service Commission, the Arizona Corporation Commission and the FERC.

A list of Dr. Jacobs' testimony is available upon request.

1986-Present GDS Associates, Inc.

As Vice-President, Dr. Jacobs directs GDS' nuclear plant monitoring activities and has assisted clients in evaluation of management and technical issues related to power plant construction, operation and design. He has evaluated and testified on combustion turbine projects in certification hearings and has assisted the Georgia PSC in monitoring the construction of the combustion turbine projects. Dr. Jacobs has evaluated nuclear plant operations and provided testimony in the areas of nuclear plant operation, construction prudence and decommissioning in nine states. He has provided litigation support in complex law suits concerning the construction of nuclear power facilities.

1985-1986 Institute of Nuclear Power Operations (INPO)

Dr. Jacobs performed evaluations of operating nuclear power plants and nuclear power plant construction projects. He developed INPO Performance Objectives and Criteria for the INPO Outage Management Department. Dr. Jacobs performed Outage Management Evaluations at the following nuclear power plants:

- Connecticut Yankee - Connecticut Yankee Atomic Power Co.
- Callaway Unit I - Union Electric Co.
- Surry Unit I - Virginia Power Co.
- Ft. Calhoun - Omaha Public Power District
- Beaver Valley Unit 1 - Duquesne Light Co.

During these outage evaluations, he provided recommendations to senior utility management on techniques to improve outage performance and outage management effectiveness.

1979-1985 Westinghouse Electric Corporation

As site manager at Philippine Nuclear Power Plant Unit No. 1, a 655 MWe PWR located in Bataan, Philippines, Dr. Jacobs was responsible for all site activities during completion phase of the project. He had overall management responsibility for startup, site engineering, and plant completion departments. He managed workforce of approximately 50 expatriates and 1700 subcontractor

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Vice President - Generation Support Services

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personnel. Dr. Jacobs provided day-to-day direction of all site activities to ensure establishment of correct work priorities, prompt resolution of technical problems and on schedule plant completion.

Prior to being site manager, Dr. Jacobs was startup manager responsible for all startup activities including test procedure preparation, test performance and review and acceptance of test results. He established the system turnover program, resulting in a timely turnover of systems for startup testing.

As startup manager at the KRSKO Nuclear Power Plant, a 632 MWE PWR near Krsko, Yugoslavia, Dr. Jacobs' duties included development and review of startup test procedures, planning and coordination of all startup test activities, evaluation of test results and customer assistance with regulatory questions. He had overall responsibility for all startup testing from Hot Functional Testing through full power operation.

1973 - 1979 NUS Corporation

As Startup and Operations and Maintenance Advisor to Korea Electric Company during startup and commercial operation of Ko-Ri Unit 1, a 595 MWE PWR near Pusan, South Korea, Dr. Jacobs advised KECO on all phases of startup testing and plant operations and maintenance through the first year of commercial operation. He assisted in establishment of administrative procedures for plant operation.

As Shift Test Director at Crystal River Unit 3, an 825 MWE PWR, Dr. Jacobs directed and performed many systems and integrated plant tests during startup of Crystal River Unit 3. He acted as data analysis engineer and shift test director during core loading, low power physics testing and power escalation program.

As Startup engineer at Kewaunee Nuclear Power Plant and Beaver Valley, Unit 1, Dr. Jacobs developed and performed preoperational tests and surveillance test procedures.

1971 - 1973 Southern Nuclear Engineering, Inc.

Dr. Jacobs performed engineering studies including analysis of the emergency core cooling system for an early PWR, analysis of pressure drop through a redesigned reactor core support structure and developed a computer model to determine tritium build up throughout the operating life of a large PWR.

#### **SIGNIFICANT CONSULTING ASSIGNMENTS:**

William R. Jacobs, Jr.  
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Georgia Public Service Commission – Selected as the Independent Construction Monitor to assist the GPSC staff in monitoring all aspects of the design, licensing and construction of Plant Vogtle Units 3 and 4, two AP1000 nuclear power plants.

Georgia Public Service Commission – Assisted the Georgia Public Service Commission Staff and provided testimony related to the evaluation of Georgia Power Company's request for certification to construct two AP1000 nuclear power plants at the Plant Vogtle site.

South Carolina Office of Regulatory Staff – Assisted the South Carolina Office of Regulatory Staff in evaluation of South Carolina Electric and Gas' request for certification of two AP1000 nuclear power plants at the V.C. Summer site.

Florida Office of Public Counsel – Assists the Florida Office of Public Counsel in monitoring the development of four new nuclear power plants in Florida including providing testimony on the prudence of expenditures.

East Texas Electric Cooperative – Represents ETEC on the management committee of the Plum Point Unit 1 a 650 Mw coal-fired plant under construction in Osceola, Arkansas and represents ETEC on the management committee of the Harrison County Power Project, a 525 Mw combined cycle power plant located near Marshall, Texas.

Arizona Corporation Commission – Evaluated operation of the Palo Verde Nuclear Generating Station during the year 2005. Included evaluation of 11 outages and providing written and oral testimony before the Arizona Corporation Commission.

Citizens Utility Board of Wisconsin – Evaluated Spring 2005 outage at the Kewaunee Nuclear Power Plant and provided direct and surrebuttal testimony before the Wisconsin Public Service Commission.

Georgia Public Service Commission - Assisted the Georgia PSC staff in evaluation of Integrated Resource Plans presented by two investor owned utilities. Review included analysis of purchase power agreements, analysis of supply-side resource mix and review of a proposed green power program.

State of Hawaii, Department of Business, Economic Development and Tourism – Assisted the State of Hawaii in development and analysis of a Renewable Portfolio Standard to increase the amount of renewable energy resources developed to meet growing electricity demand. Presented the results of this work in testimony before the State of Hawaii, House of Representatives.

Georgia Public Service Commission - Assisted the Georgia PSC staff in providing oversight to the bid evaluation process concerning an electric utility's evaluation of responses to a Request

William R. Jacobs, Jr.  
Vice President - Generation Support Services

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for Proposals for supply-side resources. Projects evaluated include simple cycle combustion turbine projects, combined cycle combustion turbine projects and co-generation projects.

Millstone 3 Nuclear Plant Non-operating Owners – Evaluated the lengthy outage at Millstone 3 and provided analysis of outage schedule and cost on behalf of the non-operating owners of Millstone 3. Direct testimony provided an analysis of additional post-outage O&M costs that would result due to the outage. Rebuttal testimony dealt with analysis of the outage schedule.

H.C. Price Company – Evaluated project management of the Healy Clean Coal Project on behalf of the General Contractor, H.C. Price Company. The Healy Clean Coal Project is a 50 megawatt coal burning power plant funded in part by the DOE to demonstrate advanced clean coal technologies. This project involved analysis of the project schedule and evaluation of the impact of the owner's project management performance on costs incurred by our client.

Steel Dynamics, Inc. – Evaluated a lengthy outage at the D.C. Cook nuclear plant and presented testimony to the Indiana Utility Regulatory Commission in a fuel factor adjustment case Docket No. 38702-FAC40-S1.

Florida Office of Public Counsel - Evaluated lengthy outage at Crystal River Unit 3 Nuclear Plant. Submitted expert testimony to the Florida Public Service Commission in Docket No. 970261-EI.

United States Trade and Development Agency - Assisted the government of the Republic of Mauritius in development of a Request for Proposal for a 30 MW power plant to be built on a Build, Own, Operate (BOO) basis and assisted in evaluation of Bids.

Louisiana Public Service Commission Staff - Evaluated management and operation of the River Bend Nuclear Plant. Submitted expert testimony before the LPSC in Docket No. U-19904.

U.S. Department of Justice - Provided expert testimony concerning the in-service date of the Harris Nuclear Plant on behalf of the Department of Justice U.S. District Court.

City of Houston - Conducted evaluation of a lengthy NRC required shutdown of the South Texas Project Nuclear Generating Station.

Georgia Public Service Commission Staff - Evaluated and provided testimony on Georgia Power Company's application for certification of the Intercession City Combustion Turbine Project - Docket No. 4895-U.

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Seminole Electric Cooperative, Inc. - Evaluated and provided testimony on nuclear decommissioning and fossil plant dismantlement costs - FERC Docket Nos. ER93-465-000, et al.

Georgia Public Service Commission Staff - Evaluated and prepared testimony on application for certification of the Robins Combustion Turbine Project by Georgia Power Company - Docket No. 4311-U.

North Carolina Electric Membership Corporation - Conducted a detailed evaluation of Duke Power Company's plans and cost estimate for replacement of the Catawba Unit 1 Steam Generators.

Georgia Public Service Commission Staff - Evaluated and prepared testimony on application for certification of the McIntosh Combustion Turbine Project by Georgia Power Company and Savannah Electric Power Company - Docket No. 4133-U and 4136-U.

New Jersey Rate Counsel - Review of Public Service Electric & Gas Company nuclear and fossil capital additions in PSE&G general rate case.

Corn Belt Electric Cooperative/Central Iowa Power Electric Cooperative - Directs an operational monitoring program of the Duane Arnold Energy Center (565 Mwe BWR) on behalf of the non-operating owners.

Cities of Calvert and Kosse - Evaluated and submitted testimony of outages of the River Bend Nuclear Station - PUCT Docket No. 10894.

Iowa Office of Consumer Advocate - Evaluated and submitted testimony on the estimated decommissioning costs for the Cooper Nuclear Station - IUB Docket No. RPU-92-2.

Georgia Public Service Commission/Hicks, Maloof & Campbell - Prepared testimony related to Vogtle and Hatch plant decommissioning costs in 1991 Georgia Power rate case - Docket No. 4007-U.

City of El Paso - Testified before the Public Utility Commission of Texas regarding Palo Verde Unit 3 construction prudence - Docket No. 9945.

City of Houston - Testified before Texas Public Utility Commission regarding South Texas Project nuclear plant outages - Docket No. 9850.

NUCOR Steel Company - Evaluated and submitted testimony on outages of Carolina Power and Light nuclear power facilities - SCPSC Docket No. 90-4-E.



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Vice President - Generation Support Services

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Georgia Public Service Commission/Hicks, Maloof & Campbell - Assisted Georgia Public Service Commission staff and attorneys in many aspects of Georgia Power Company's 1989 rate case including nuclear operation and maintenance costs, nuclear performance incentive plan for Georgia and provided expert testimony on construction prudence of Vogtle Unit 2 and decommissioning costs of Vogtle and Hatch nuclear units - Docket No. 3840-U.

Swidler & Berlin/Niagara Mohawk - Provided technical litigation support to Swidler & Berlin in law suit concerning construction mismanagement of the Nine Mile 2 Nuclear Plant.

Long Island Lighting Company/Shea & Gould - Assisted in preparation of expert testimony on nuclear plant construction.

North Carolina Electric Membership Corporation - Prepared testimony concerning prudence of construction of Carolina Power & Light Company's Shearon Harris Station - NCUC Docket No. E-2, Sub537.

City of Austin, Texas - Prepared estimates of the final cost and schedule of the South Texas Project in support of litigation.

Tex-La Electric Cooperative/Brazos Electric Cooperative - Participated in performance of a construction and operational monitoring program for minority owners of Comanche Peak Nuclear Station.

Tex-La Electric Cooperative/Brazos Electric Cooperative/Texas Municipal Power Authority (Attorneys - Burchette & Associates, Spiegel & McDiarmid, and Fulbright & Jaworski) - Assisted GDS personnel as consulting experts and litigation managers in all aspects of the lawsuit brought by Texas Utilities against the minority owners of Comanche Peak Nuclear Station.

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**EDUCATION:** M.S., Mechanical Engineering, Stanford University, 1969  
U.S. Navy Nuclear Power Training Program, 1964-65  
B.S., Electrical Engineering, MIT, 1964

**ENGINEERING REGISTRATION:** Registered Professional Engineer, Retired

Mr. McGaughy and five others founded GDS Associates, Inc. in 1986. Mr. McGaughy retired from GDS as an officer, board member and stockholder in May 2006. Since that time he has worked for GDS on various generation related consulting assignments on a part time basis.

**EXPERIENCE:**

While Mr. McGaughy was full time at GDS, he directed the power generation services function at GDS Associates, Inc. He has more than 45 years experience in the power generation field in the areas of licensing, design, construction, start-up, operation, and maintenance of nuclear and fossil-fired power plants. Mr. McGaughy has worked with top utility management to solve problems on a wide range of power generation issues. He has successfully managed extremely large and complex generation projects, both nuclear and fossil, which required the rigorous maintenance of project schedules and quality. He has performed studies concerning cogeneration projects involving unit dispatch and FERC operating and efficiency standards. Mr. McGaughy has provided testimony before the Texas Public Utility Commission, Public Utility Commission of Ohio, South Carolina Public Service Commission, Georgia Public Service Commission, Hawaii Public Utility Commission, New Jersey Board of Regulatory Commissioners, Michigan Public Utility Commission, Wisconsin Public Service Commission and FERC. He has performed work concerning over 30 nuclear units and 24 fossil-fired steam units as well as numerous combustion turbine and combined cycle units.

**Specific Experience Includes:**

**2006-Present GDS Associates, Inc.**

As an Executive Engineer, Mr. McGaughy has worked on various power plant related projects.

**1986-2006 GDS Associates, Inc.**

As Vice President and Secretary, Mr. McGaughy served as head of the Generation Services Department of GDS. GDS has provided construction and operations monitoring program at five nuclear units and six coal-fired units for minority owners. GDS has

**James P. McGaughy, Jr.**

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provided expert witness and litigation support in lawsuits involving six nuclear units. Mr. McGaughy also has been responsible for prudence, construction monitoring and litigation support efforts at numerous other nuclear units and for development of a nuclear performance standard program for the Georgia Public Service Commission. He has testified on combustion turbine construction projects in certification proceedings and has testified on dispatch, reliability, avoided cost and other issues concerning cogeneration projects.

1984-1986     **Southern Engineering Company**

As Director of Generation Services, Mr. McGaughy conducted construction and operations monitoring for clients at power plants throughout the United States. In addition, Mr. McGaughy prepared testimony for various rate cases on generation matters at FERC and state commissions. He provided assistance to clients in all generation matters including contract administration and litigation support.

1980-1984     **Mississippi Power and Light Company**

Mr. McGaughy served as Vice President, Nuclear (1983-84) and Assistant Vice President, Nuclear Production (1980-82). He was responsible for all aspects of construction and operation of a multi-billion dollar power generation facility. In this capacity he hired and trained the nuclear power plant staff of over 500 people, including 29 licensed operators and numerous experienced utility managers. Mr. McGaughy also established a unique design engineering group which grew to over 125 people and had overall responsibility for interface with the Nuclear Regulatory Commission and all contractors on the project. During this tenure, cost and schedule performance was better than at any other similar plant (G.E. Boiling Water Reactor, BWR-6 design).

1973-1980     **Mississippi Power and Light Company**

Mr. McGaughy served as Director of Power Production (1978-80). In this capacity he was responsible for all power production related activities including construction, operation, engineering, maintenance, licensing, nuclear safety, staffing, and training. He prepared and administered annual personnel and operating budgets for 600 people and more than \$50 million, and an annual capital budget of \$280 million. He also established a formal screening program for hiring craft personnel, established a formal preventive maintenance program, and reorganized his department based on job performance. He served as project manager for 2-unit, 1,600 MW coal project.

**Mississippi Power and Light Company**

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Mr. McGaughy served as Nuclear Project Manager (1976-78) and Assistant Project Manager (1973-75). He was responsible for forming and managing an organization to control the prime contractor on a \$4 billion construction project. He began the formation of plant staff organization. He was also responsible for relations with the Nuclear Regulatory Commission and the prime contractor (Bechtel). The construction permit was awarded in record time.

1971-1973    **Middle South Services, Inc.**

Mr. McGaughy served as a nuclear engineer on the holding company staff responsible for economic and engineering studies including the feasibility evaluation for Grand Gulf Nuclear Station. He performed nuclear fuel and uranium buying functions. He also performed generation-mix studies.

1969 - 1971    **Arkansas Power and Light Company**

Mr. McGaughy was responsible for nuclear fuel procurement and performed the licensing work including the preparation of the Safety Analysis Report for Arkansas Nuclear One, Unit 2.

1964-1968    **U.S. Navy**

Served as an engineering officer on nuclear propulsion power plants aboard navy submarines.

**SIGNIFICANT CONSULTING ASSIGNMENTS:**

Georgia Public Service Commission/Georgia Power Co.—Assisting in GDS role as Independent Construction Monitor a Vogtle 3&4, Georgia Power's new nuclear projects.

Public Counsel-State of Florida—Reviewed construction costs on Florida Power & Light and Florida Progress new nuclear plant projects and uprate projects

Pacific Gas & Electric Company – Performed technical analyses of two different cogeneration plants to determine if projects had met FERC and state efficiency and operating standards.

Niagara Mohawk Power Corporation/Swidler & Berlin – Assisting in FERC proceeding to set new rates for disqualified former QF.

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Niagara Mohawk Power Corporation/Swidler & Berlin – Prepared extensive technical analysis for filing in federal court and at FERC concerning efficiency and operating standards of cogeneration facility in support of motion to revoke QF certification

Attorney General, State of Michigan – Prepared analysis and testimony concerning power plant availability and system dispatch relating to the Midland cogeneration project in Consumers Power fuel plan case.

Attorney General, State of Michigan – Prepared analysis and testimony concerning purchased power costs relating to the Midland cogeneration project in Consumers Power fuel reconciliation case.

Attorney General, State of Michigan – Prepared analysis and testimony concerning avoided costs, PURPA rates, reserve margins, plant availability and dispatchability in MCV cogeneration facility settlement case.  
U-10127.

Attorney General, State of Michigan – Analysis and testimony concerning Consumers' application of requirements of order in Case No. U-10127 relating to the Midland cogeneration project.

North Carolina Electric Membership Cooperative – Performed due diligence review of management for a 3-site, 1,200 MW, peaking project. Reviewed management site selection, fuel, equipment selection, environmental, contracting and other aspects.

VECO Alaska, Inc. – Served as construction project management expert witness for EPC contractor in lawsuit concerning construction overruns in a turnkey cogeneration project in Alaska. Served as witness in successful mediation.

H.C. Price Construction Company – Provided detailed analysis and mediation presentations concerning construction project management in case involving construction contractor and owner (State of Alaska) of a coal-fired plant in Alaska.

Rusk County, Texas Rural Electric Cooperative/Richard Balough – Testified before the Texas Public Utility Commission concerning coal-fired plant station electric service in territorial dispute with Texas Utilities.

Sam Rayburn G&T – Ongoing operational monitoring program concerning client's interest in Nelson 6 Coal Station operated by Gulf States Utilities.

Kamo Electric Cooperative – Operational monitoring program for client's minority interest in GRDA Unit 2 Coal Fired Station.

**James P. McGaughy, Jr.**

*GDS Associates, Inc.*  
*Page 5 of 7*

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Northeast Texas Electric Cooperative – Ongoing construction monitoring and operational monitoring program concerning NTEC's interest in Pirkey Coal Station operated by Southwestern Electric Power Company and Dolet Hills Station operated by Central Louisiana Electric Company.

Sawnee and Coweta/Fayette Electric Membership Cooperatives – Served as Owner's project monitor on Sewell Creek Combustion Turbine Plant, Doyle Combustion Turbine Project, Chattahoochee Combined Cycle Project and Talbot County Combustion Turbine Project.

Northeast Texas Electric Cooperative – Served as Owner's representative on Project Management Committee for design, construction and operation of 500Mw combined cycle plant.

U.S. Department of Justice – Served as expert witness in two tax cases involving investment tax credits for nuclear fuel.

Blue Ridge Power Agency—Advised management concerning participation in new coal-fired power plant projects.

Steel Dynamics, Inc. – Analysis of imprudence and replacement power costs at D.C. Cook Plant.

Corn Belt Power Cooperative – Performed review of available options for board of directors with recommendations for future plan of action.

East Texas Electric Cooperative – Assisted cooperative in negotiating steam and electric service contract with industrial customer.

Georgia Public Service Commission Staff – Testified before the Georgia Public Service Commission recommending that a nuclear performance standard be implemented in the State of Georgia. The Commission implemented the recommended standard.

City of El Paso – Testified before the Public Utility Commission of Texas regarding Palo Verde operations and maintenance expenses.

City of El Paso – Testified before the Public Utility Commission of Texas regarding valuation of Palo Verde power plant and other merger issues.

**James P. McGaughy, Jr.**

*GDS Associates, Inc.*  
*Page 6 of 7*

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City of Homestead, Florida/Spiegel & McDiarmid – Assisted City in lawsuit regarding DeLaval Diesel-Generators. Prepared expert testimony and gave major deposition on subject before favorable settlement.

El Paso Community College/Law offices of Jim Boyle – Prepared testimony concerning level of Palo Verde Nuclear Station operation and maintenance costs requested by El Paso Electric. Analysis was performed on bases of comparative studies and on specific analysis of cost filed by El Paso Electric.

Old Dominion Electric Cooperative – Prepared testimony filed at FERC concerning prudent levels of coal inventory for inclusion Virginia Power working capital.

Long Island Lighting Company/Shea & Gould – Prepared expert testimony on nuclear plant construction.

Ohio Public Service Commission – Prepared testimony related to decommissioning costs of Toledo Edison's Davis-Besse Nuclear Station.

Georgia Public Service Commission/Hicks, Maloof & Campbell – Assisted Georgia Public Service Commission staff and attorneys in many aspects of Georgia Power Company's 1989 rate case including analysis of service company charges, construction prudence of Vogtle Unit 2, decommissioning costs of Vogtle and Hatch nuclear units, prepared expert testimony on operation and maintenance costs for Hatch and Vogtle nuclear units, prepared expert testimony on Performance Incentive Plan for Georgia Power nuclear units.

Georgia Public Service Commission/Hicks, Maloof & Campbell – Prepared testimony related to Vogtle and Hatch plant operations and maintenance costs in 1991 Georgia Power rate case.

Georgia Public Service Commission Staff – Prepared testimony concerning certification of McIntosh Units, Warner Robins Units, Intercession City Unit and Florida Power Corporation Power Purchase (three separate dockets)

City of Houston – Testified before Texas Public Utility Commission regarding South Texas Project operation and maintenance expenses.

Sam Rayburn G&T – Prepared testimony before Texas Public Utility Commission concerning certificate of convenience and necessity for co-op purchase of 38 mw interest in an existing coal-fired plant.

**James P. McGaughy, Jr.**

*GDS Associates, Inc.*  
*Page 7 of 7*

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Aetna Insurance Company/Dickson, Carlson & Campillo – Assisted attorneys in analysis of Southern California Edison claims of property damage and replacement power costs. Prepared written analyses used in achieving favorable settlements for clients.

East Texas Electric Cooperative – Performed economic and technical feasibility analyses on hydro and thermal generation alternatives.

Allegheny Electric Power Cooperative – Assisted co-op in review of various financial and technical issues of Susquehanna Nuclear Station.

Saluda River Electric Cooperative – Assisted co-op in review of technical issues including decommissioning and minimum net dependable capability ratings for the co-op's minority interest in Catawba Nuclear Station operated by Duke Power Company.

City of Midland, Michigan – Assisted city in tax assessment case concerning Midland Nuclear Plant with Consumer's Power Company.

City of Wallingford, Connecticut – Reviewed decommissioning costs of Millstone Nuclear Units 1, 2, and 3 in CP&L rate case at FERC.

Nucor Steel/Ritts, Brickfield & Kaufman – Prepared testimony concerning prudence of construction of Carolina Power & Light Company's Sheron Harris Station.

City of Austin, Texas – Review of cost and schedule of South Texas Nuclear Plant.

Sam Rayburn Municipal Power Authority – Performed operational monitoring program relative to the client's minority interest in Nelson 6 Coal Station operated by Gulf States Utilities.

Tex-La Electric Cooperative/Brazos Electric Cooperative – Conducted construction and operational monitoring program for minority owners of Comanche Peak Nuclear Station.

Tex-La Electric Cooperative/Brazos Electric Cooperative/Texas Municipal Power Authority (Attorneys - Burchette & Associates, Spiegel & McDiarmid, and Fulbright & Jaworski) – Assisted attorneys as consulting experts and litigation managers in all aspects of the lawsuit brought by Texas Utilities against the minority owners of Comanche Peak Nuclear Station.

New Jersey Rate Counsel – Review of Public Service Electric & Gas Company nuclear and fossil O&M costs and capital additions in PSE&G general rate case.



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Jeffrey J. Lyash  
President & CEO  
Progress Energy Florida, Inc.

April 30, 2009

LNP-EPC-2009-0019  
Response (Action) Required YES X/NO \_\_\_\_\_  
Our Reference Letter # LNP-EPC-2009-017

Stone & Webster, Inc.  
Attention: Dr. Shawn Hughes  
Consortium Project Director  
Levy Nuclear Plant  
128 S. Tryon Street, Suite 400  
Charlotte, NC 28202

Subject: Notice of Change - Schedule Scenario Analysis and Associated Cash Flow Analysis

Reference: Engineering, Procurement and Construction Agreement  
Contract No. 41430 dated December 31, 2008 (the "Agreement")

Dear Dr. Hughes:

Correspondence LNP-EPC-2009-0017 dated April 30, 2009 invoked a partial suspension of Work by Progress Energy Florida (PEF) on the Levy project based on a regulatory schedule impact. During this partial suspension, PEF requests that the Contractor work expeditiously to provide schedule and cash flow analysis that would facilitate a final determination by PEF of the Levy schedule shift.

This letter is intended to serve as Notice of a proposed Change under Section 9.4(a) of the Agreement. Attached is a table showing six scenarios covering two proposed Commercial Operation Dates for Levy Unit 1, with subsequent Commercial Operation Dates for Unit 2 that are 18, 36, and >60 months after Commercial Operation of Unit 1.

We ask that you provide the Change Order information specified in Section 9.4(a)(i) through 9.4(a)(vi) for these six scenarios. Your proposal per 9.4(v) that collectively covers these scenarios should include detailed schedule analysis and associated cash flows. This work is to be performed at the direction of Mr. Garry Miller. The results of these analyses are critical to Progress Energy's decision concerning the schedule shift for the Levy Commercial Operation Dates, and will be the foundation for negotiating a Change Order (or an amendment to the Agreement if appropriate) over the next few months.

P.O. Box 14042  
PEF-16  
St. Petersburg, FL 33733

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10NC-OPCPOD1-6-010991  
10NC-OPCPOD1-3-000005

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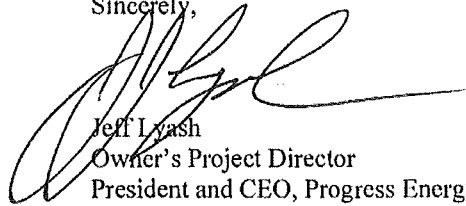
LNP-EPC-2009-0019

Page 2

We ask that you begin this work as soon as possible. Progress Energy will issue a Change Order under Section 9.4(d) to cover these costs as soon as we can. In the interim, we request that you provide us with an initial budget/cost estimate for this work. Costs and expenses incurred by the Contractor will initially be reimbursed on a Time and Material Basis per the provisions of Article 8.1(a). However, it is our expectation that we will attempt to convert this work to a fixed price for work performed after issuance of the Change Order.

If you have any questions on this matter, please contact Garry Miller, at (919)-546-6107.

Sincerely,



Jeff Lyash  
Owner's Project Director  
President and CEO, Progress Energy Florida

cc: Westinghouse Electric Company, LLC  
Attn: General Counsel  
4350 Northern Pike  
Monroeville, PA 15146

Stone & Webster, Inc.  
Attn: Ed Hubner  
3 Executive Campus  
Cherry Hill, NJ 08002

Stone & Webster, Inc.  
Attn: E.K. Jenkins  
Nuclear Division Counsel  
600 Technology Center Drive  
Stoughton, MA 02072

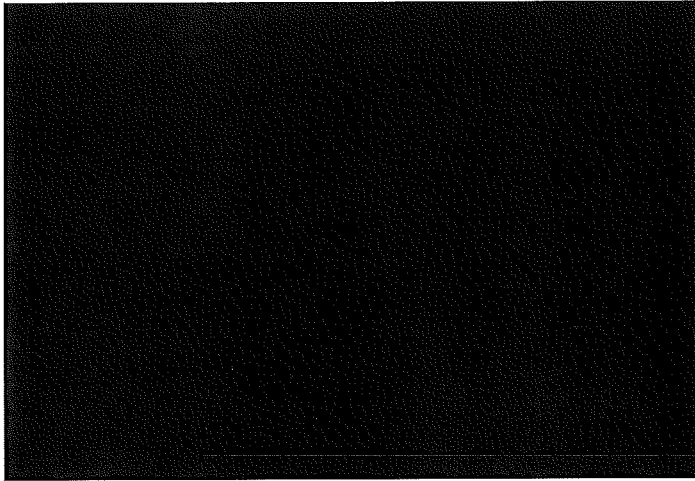
Jim Scarola, Senior Vice President & Chief Nuclear Officer (Progress Energy)  
Alex Glenn, General Counsel, Progress Energy Florida  
Garry Miller (Progress Energy)  
Bob Kitchen (Progress Energy)  
Lewis Spragins (Progress Energy)  
Vann Stephenson (Progress Energy)  
David Varner (Progress Energy)  
[LNP-EPCInbox@pgnmail.com](mailto:LNP-EPCInbox@pgnmail.com) (Progress Energy)  
[LevyProjectCorrespondenceInbox@westinghouse.com](mailto:LevyProjectCorrespondenceInbox@westinghouse.com) (Westinghouse)

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10NC-OPCPOD1-6-010992  
10NC-OPCPOD1-3-000006

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### Levy Commercial Operation Date Scenarios



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10NC-OPCPOD1-6-010993  
10NC-OPCPOD1-3-000007



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- Windows Vista
- Windows XP/2000



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**St. Petersburg Times**  
tampabay.com

May 27, 2011

## Maligned nuclear power fights to remain a U.S. option

By Robert Trigaux, Times Business Columnist

Big electric utilities pining to expand further into nuclear power are quietly hunkered down on purpose, conventional wisdom says.

They're biding their time until the fear and furor over Japan's nuclear disasters dim in people's memories. Later, when people clamor for more electricity in a rebounding U.S. economy, nuclear power can be repitched to the public in a more favorable light.

This is pretty much the stance of Progress Energy and Florida Power & Light, the two biggest and expansion-minded nuclear power players in Florida. It is also the view of North Carolina's pro-nuke Duke Energy, another big power company that will finish its planned purchase of Progress Energy late this year.

Unconventional wisdom says the backlash from Japan's nuclear nightmare, extraordinary costs of building nuclear power plants and new regulatory concern over the design and safety of the type of nuclear power plant Progress Energy wants to build in Florida's Levy County and elsewhere will slow the acceptance of nuclear power in the United States. How long? Long enough, some say, so that next-generation nukes may never happen here.

Responding to Japan's crisis, some European nations already plan to phase out nuclear power. Germany is one. Switzerland is another, deciding last week to abandon plans to build new nuclear reactors.

The Swiss scenario could win advocates. The Alpine country will let its existing generation of nukes run until they are scheduled to be shut down. By then, the thinking goes, the country will have had the time to develop new energy sources and improve energy efficiency. By then, nuclear energy may have lost its competitive advantage over renewable sources of energy.

Pie in the sky? Just last week, Mark Little, the global research director for General Electric (a company big in all sorts of energy fields, including nuclear power), said innovations may drive solar power to become cheaper than electricity generated by fossil fuels and nuclear reactors within three to five years. That's 2014 to 2016. Not far away at all.

That's a lot of maybes. But it must worry utilities so closely wed to nuclear power.

For Duke Energy and Progress Energy, the main reason to merge into one of the country's biggest power producers is to gain the added clout they claim they need to afford the enormous costs of building nuclear plants.

The United States has not approved a construction license for a commercial nuclear plant in more than three decades. The revival of the U.S. nuclear industry, urged by U.S. presidents Bush and Obama, appeared on track only a few years ago. Now it seems temporarily derailed.

In the wake of Japan's disaster, the latest blow was struck this month when the federal Nuclear Regulatory Commission that oversees (and sometimes promotes) the nuclear power industry said it has new reservations about

the Westinghouse AP1000. That's the same popular model of nuclear power plant that Progress Energy, Duke Energy, Southern Co. and Scana - all big electricity providers across the southeastern United States - want to build in abundance.

NRC Chairman Gregory Jaczko stated on May 20 that his agency's "efforts to confirm its review of Westinghouse's amended AP1000 reactor design have resulted in the uncovering of additional technical issues."

Put simply, the NRC wants better proof from Westinghouse that the concrete outer, or "shield," building that protects the reactor is engineered tough enough to withstand external attack and contain peak pressures from inside if something goes wrong. The trick, of course, is that no shield building exists yet since no reactor has been built. Westinghouse's analysis for the NRC is based on computer models.

Westinghouse, now owned by the Japanese giant Toshiba, told the NRC it will work with the federal regulator on any design question. But the company insists the AP1000 design has been well vetted and is safe.

New NRC concerns could complicate final approval for the AP1000. In addition, utilities like Progress Energy will have to decide anew if the extra costs associated with any required design change still make nuclear power a competitive energy source.

Mike Hughes, Progress Energy spokesman on nuclear matters, says his company supports the NRC's certification process.

"We have not changed the intended technology for Levy County," Hughes says, "but importantly, we also have not made a final decision to build. That decision is still a few years away."

In addition to its Levy site, Progress Energy wants to add new nuclear reactors to its existing Harris nuclear plant about 20 miles southwest of Raleigh, N.C. The company expects the NRC to decide on the license in 2014, but the reactors would not become operational until after 2025.

Looking further ahead, beyond the AP1000, Progress Energy CEO Bill Johnson has expressed interest in the idea of adopting smaller modular reactors, when such technology develops.

In December 2006, Jeff Lyash, then CEO of Progress Energy Florida, told the *St. Petersburg Times*, "It's important to have a new nuclear plant in Florida." He would soon be promoted to the company's Raleigh headquarters.

That was just before the start of the Great Recession - before population growth stalled in Florida, slowing the state's demand for new energy sources.

That was before the feds waffled on financial support for new nuclear power. Before they mothballed the long-planned Yucca Mountain repository in Nevada for dangerous radioactive waste from nuclear plants.

That was before experts elevated the damage to Japan's nuclear power plant reactors to the same disaster level as the 1986 Chernobyl meltdown.

Before fresh eyes began to have concerns about the AP1000.

*Robert Trigaux can be reached at [trigaux@sptimes.com](mailto:trigaux@sptimes.com).*

St. Petersburg Times



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# SMC Strategic Planning Retreat

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Progress Energy Florida

Scenario Analysis

August 23, 2010



## Key Assumptions - Updates

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- March 2010 scenario
- Sensitivity Analysis to March 2010 Scenario (Moderate Change scenario)



–Levy in 2027 and 2028



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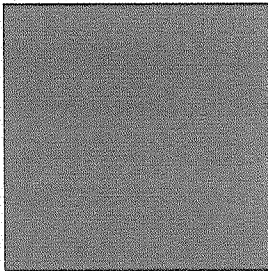


# Scenario Analysis

## What to Keep in Mind

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### Near-Term Decisions



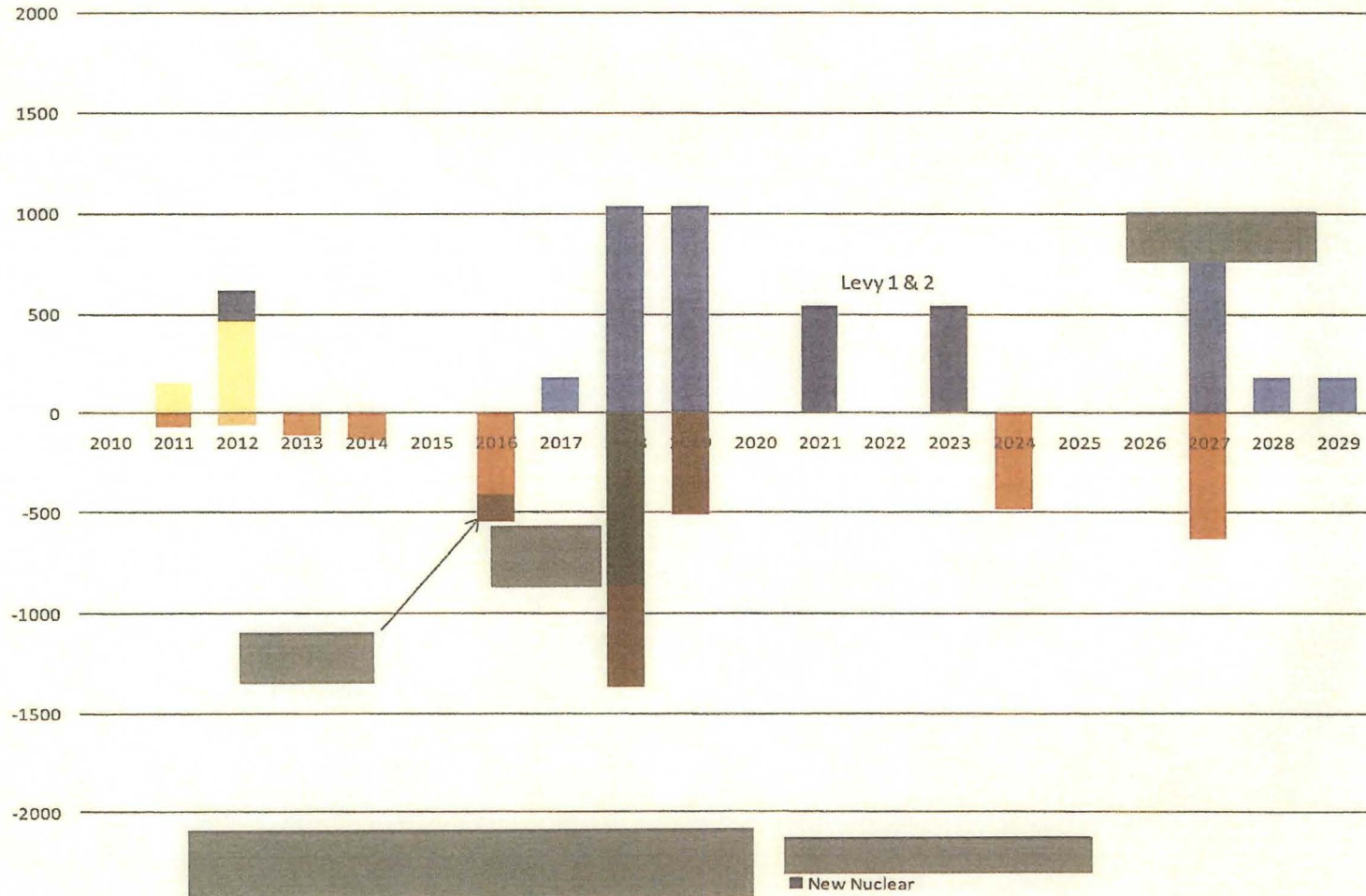
- Levy



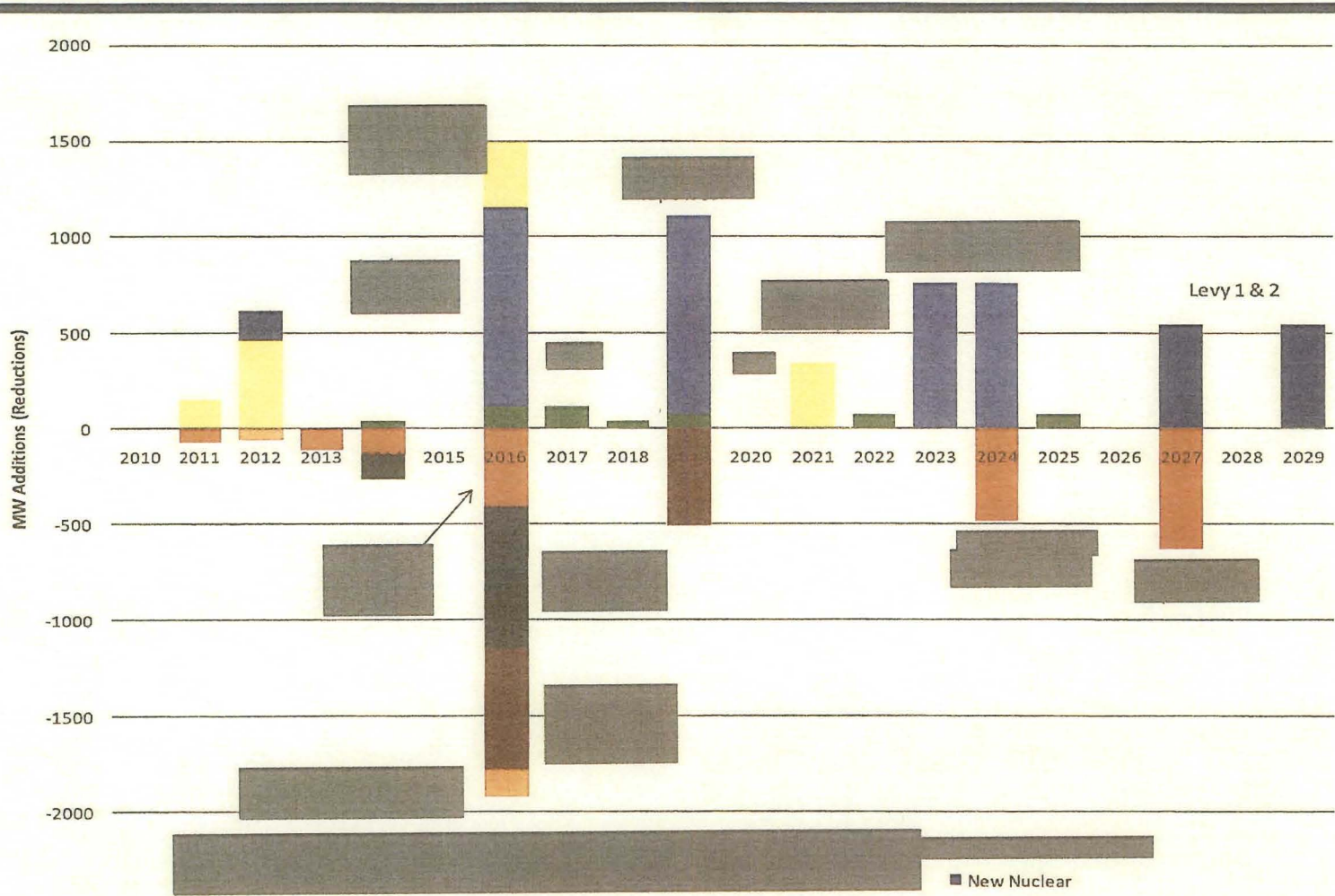
### Considerations

- Rate increases and trends
- Capital constraints
- Investment prioritization
- Financial flexibility
- Uncertainties
- Milestones and timing
- Fuel diversity
- CO2 performance and cost
- Fleet operations

# Scenario: March 2010 Resource Plan



# Scenario: Moderate Change Resource Plan



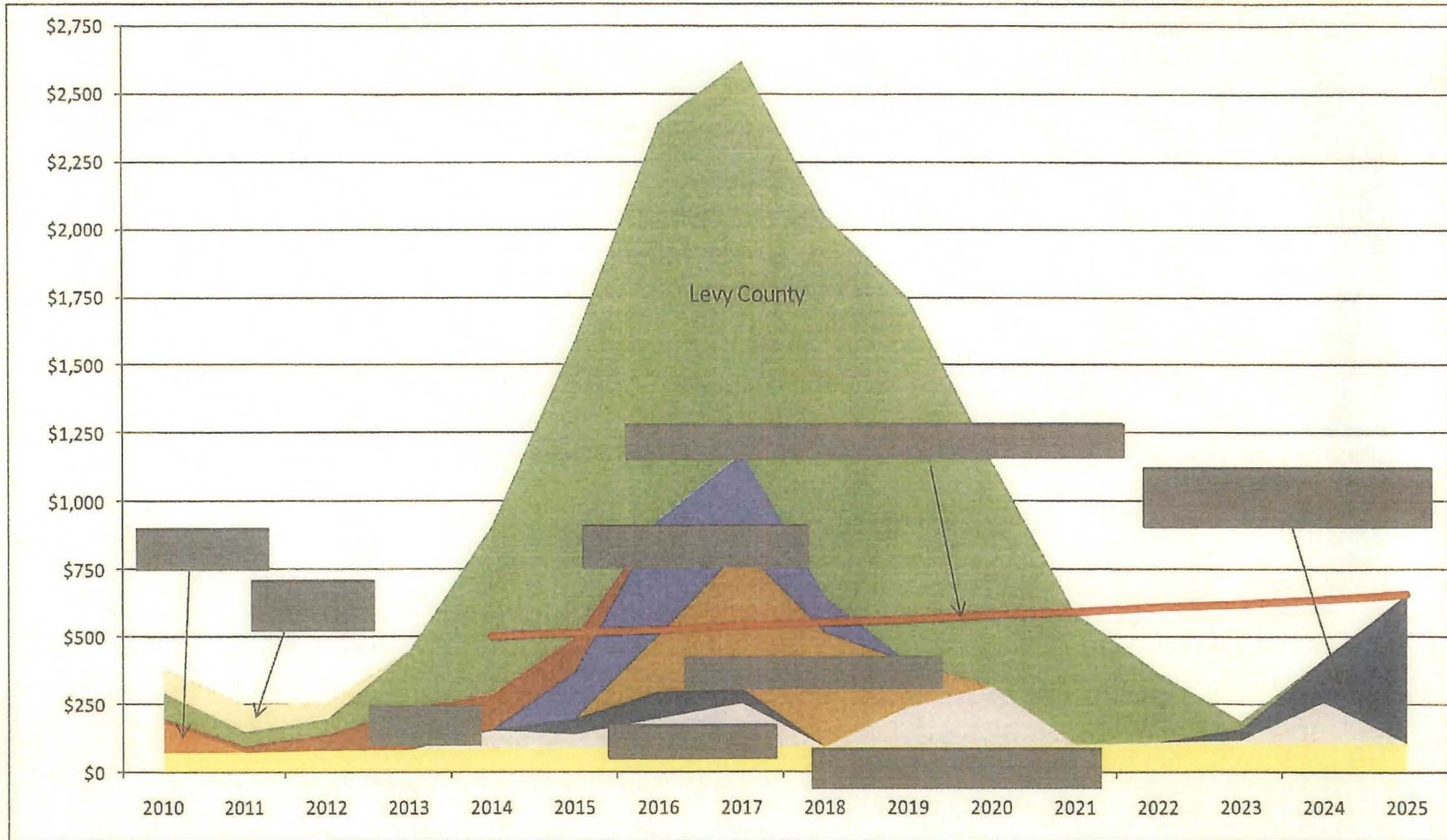
## Resource Plan Comparison

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	March '10	BAU	Mod	Tech	Aggressive
Levy	'21, '22	N/A	'27, '28	'27, '28	'24, '26

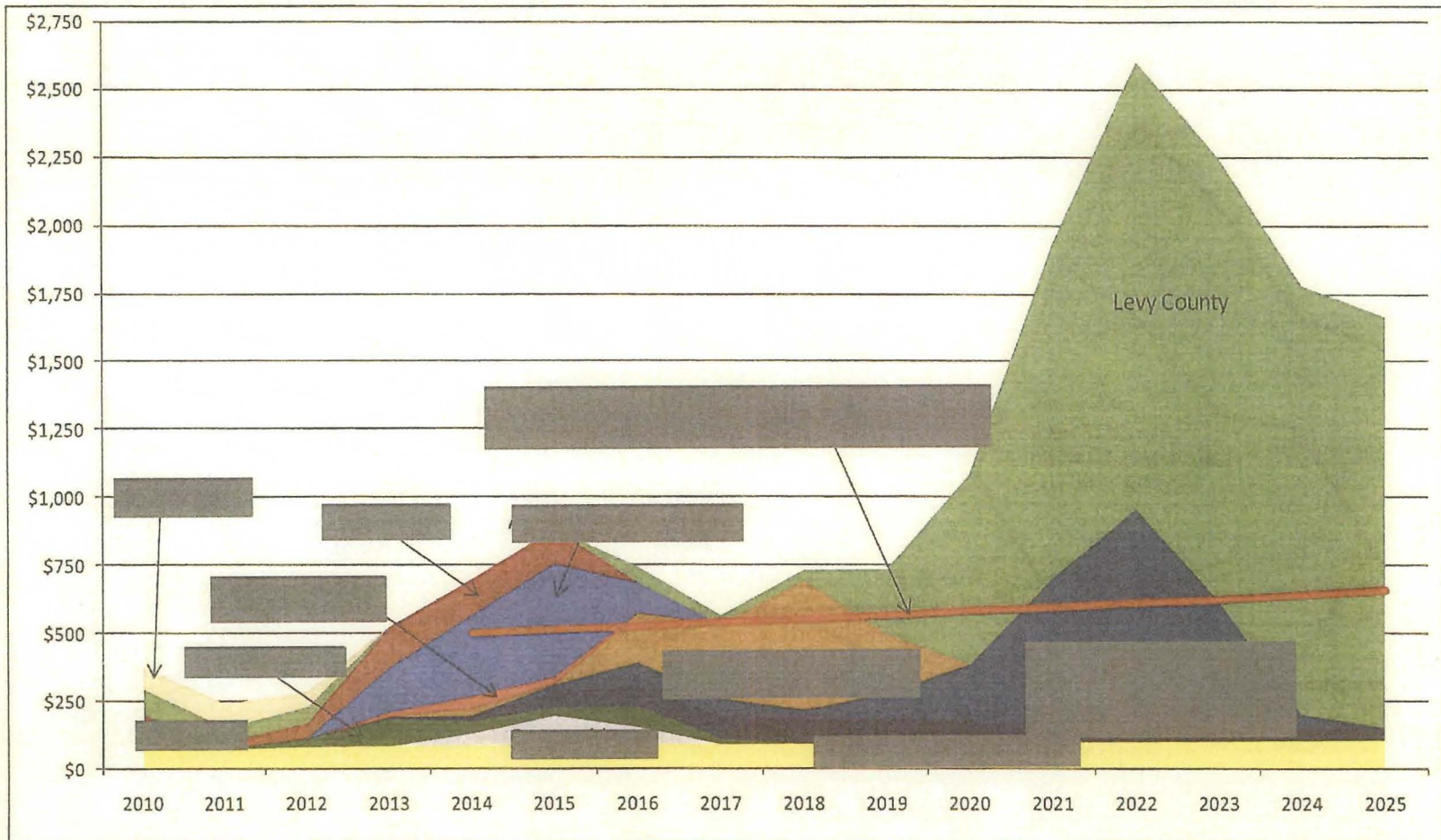
# Scenario: March 2010

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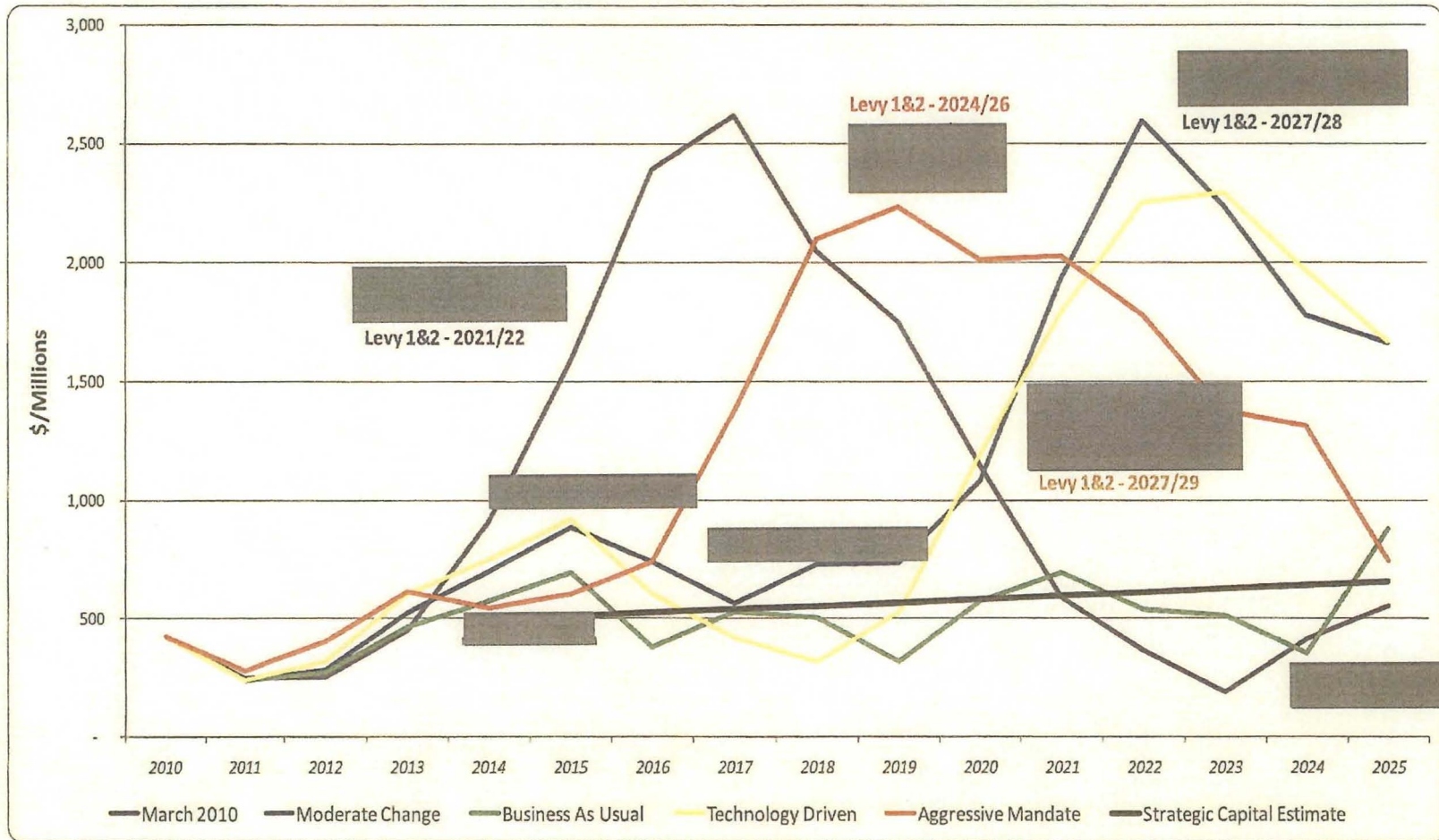


# Scenario: Moderate Change

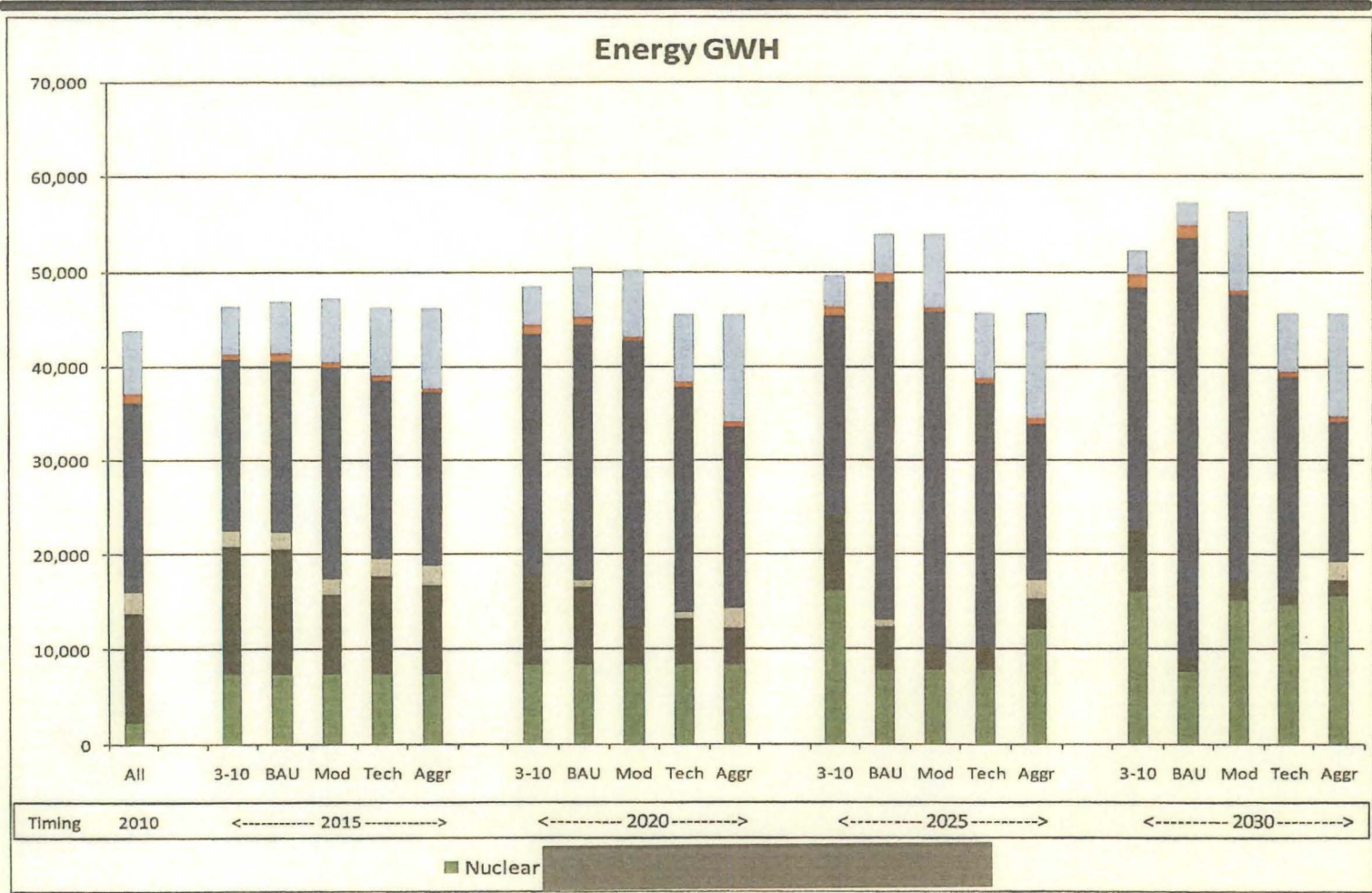
## Strategic Capital



# Strategic Capital



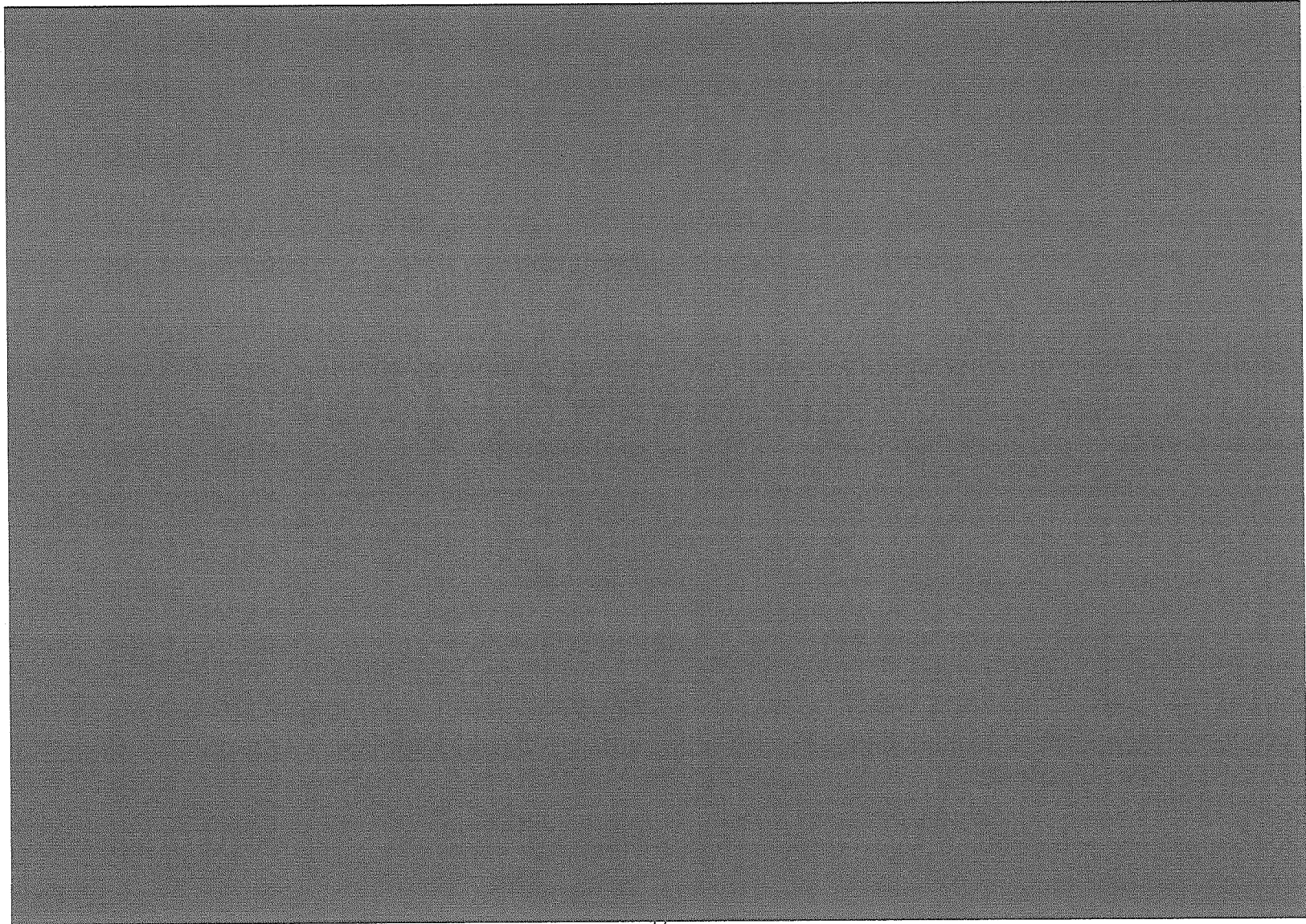
# System Energy Mix





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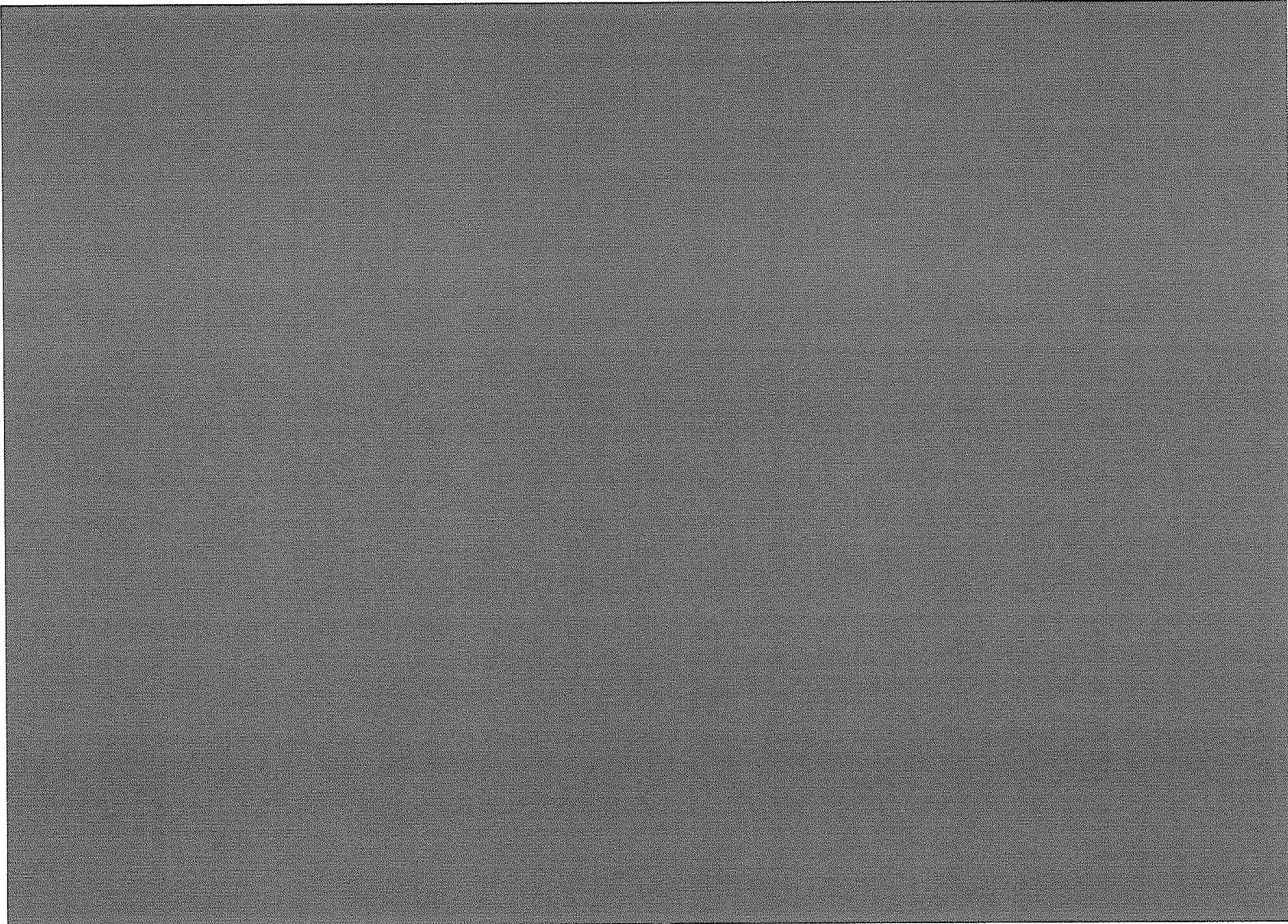
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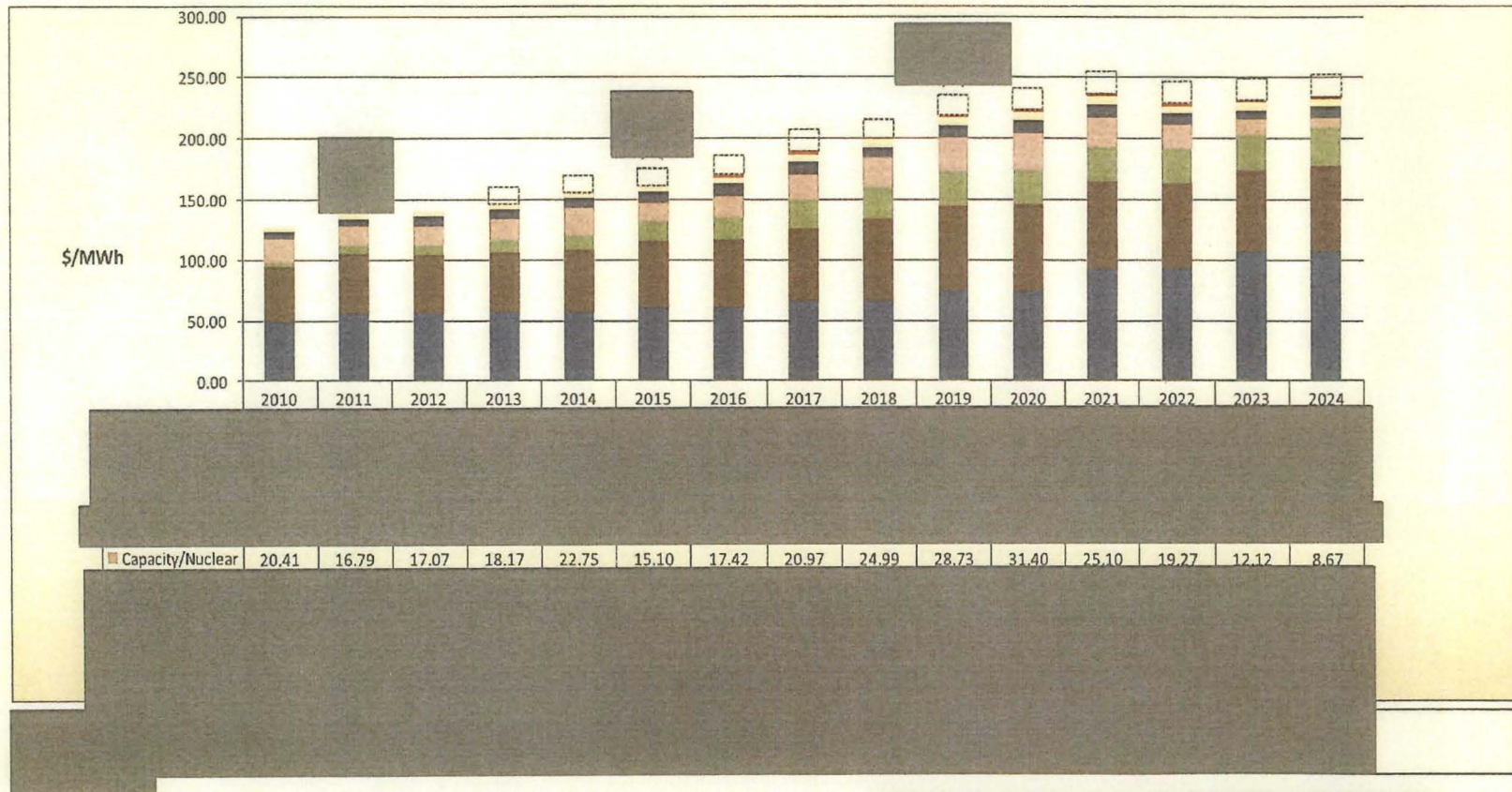
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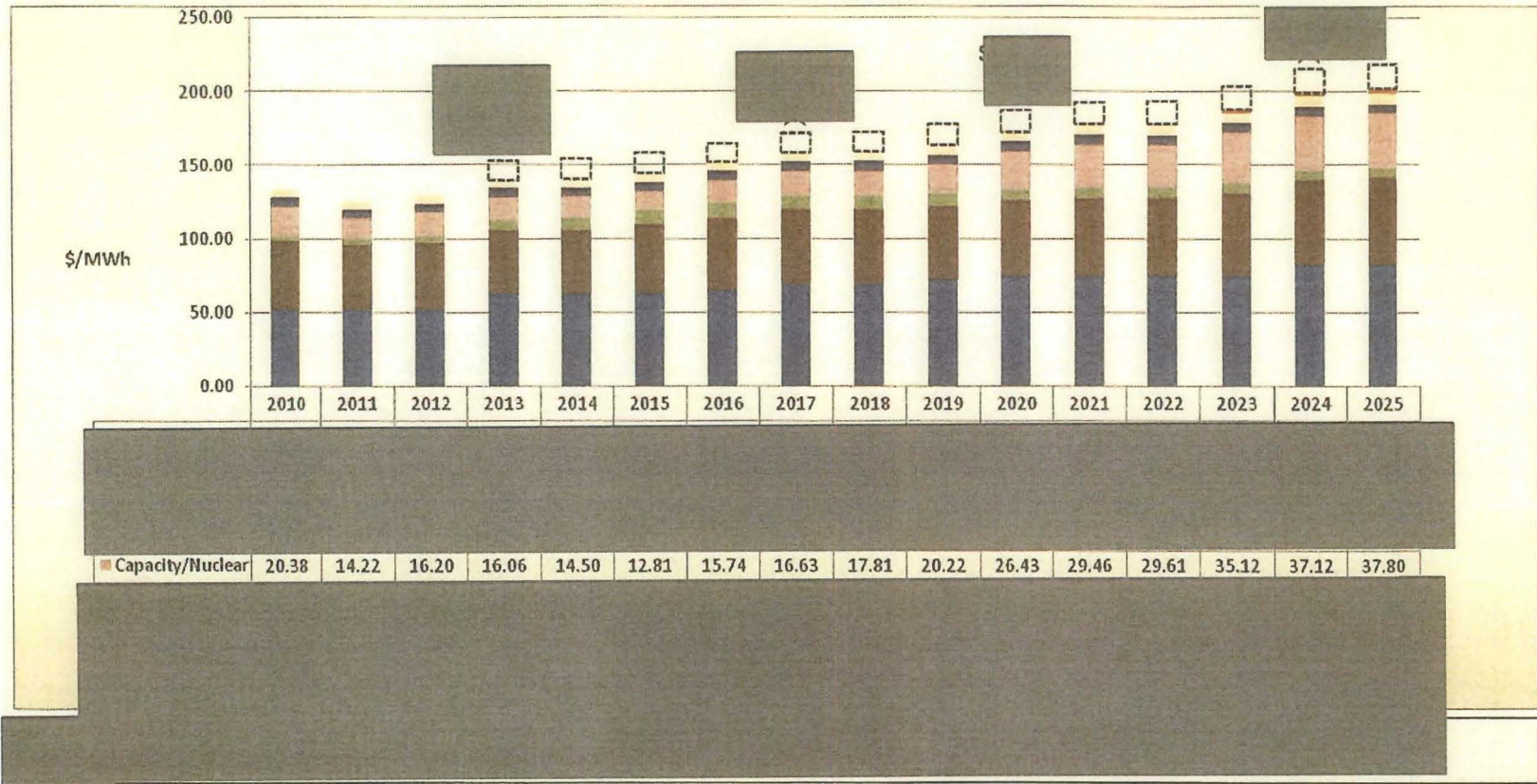
## Scenario: March 2010

### Residential Rate for 1,000 kWh



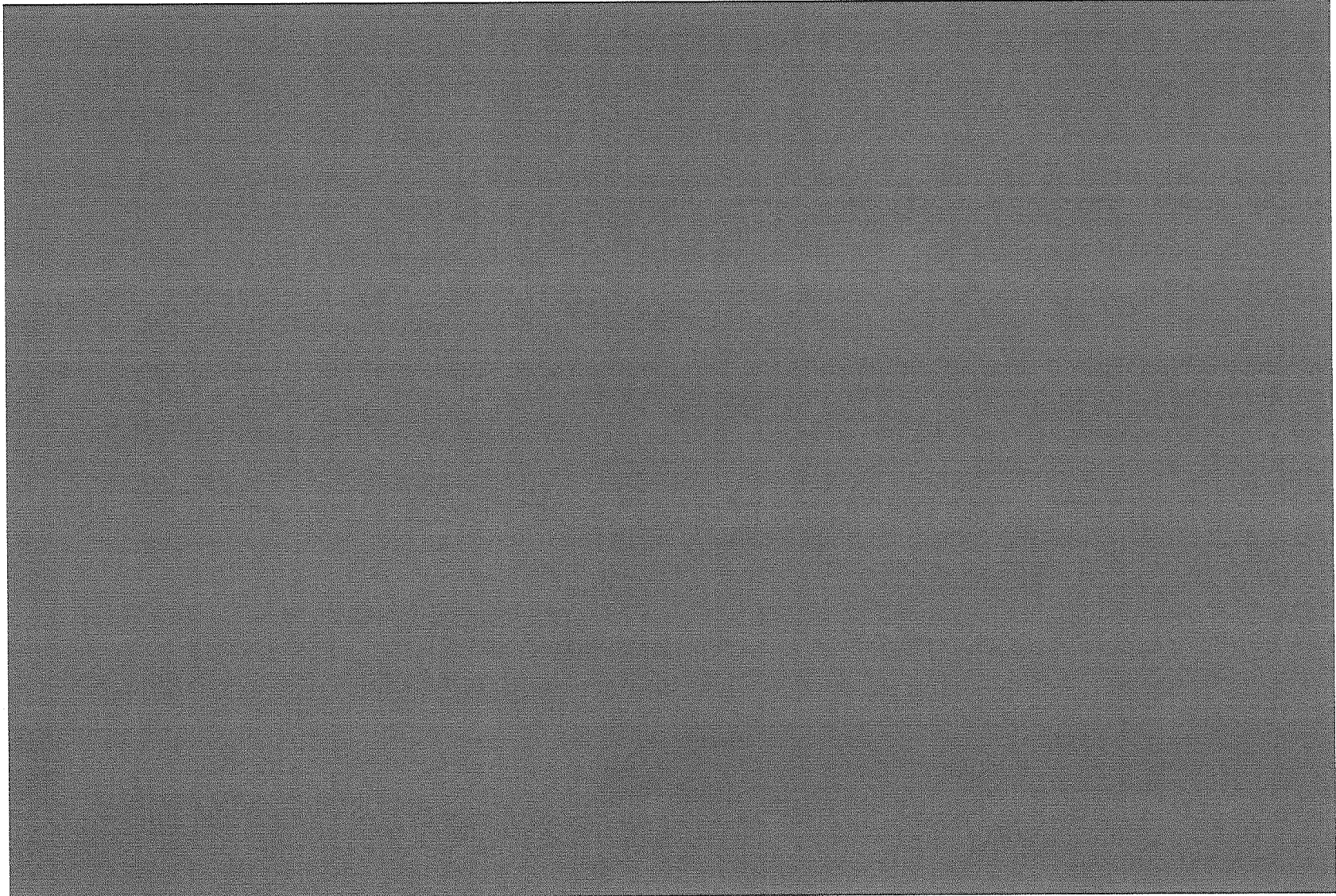
# Scenario: Moderate Change

## Residential Rate for 1,000 kWh



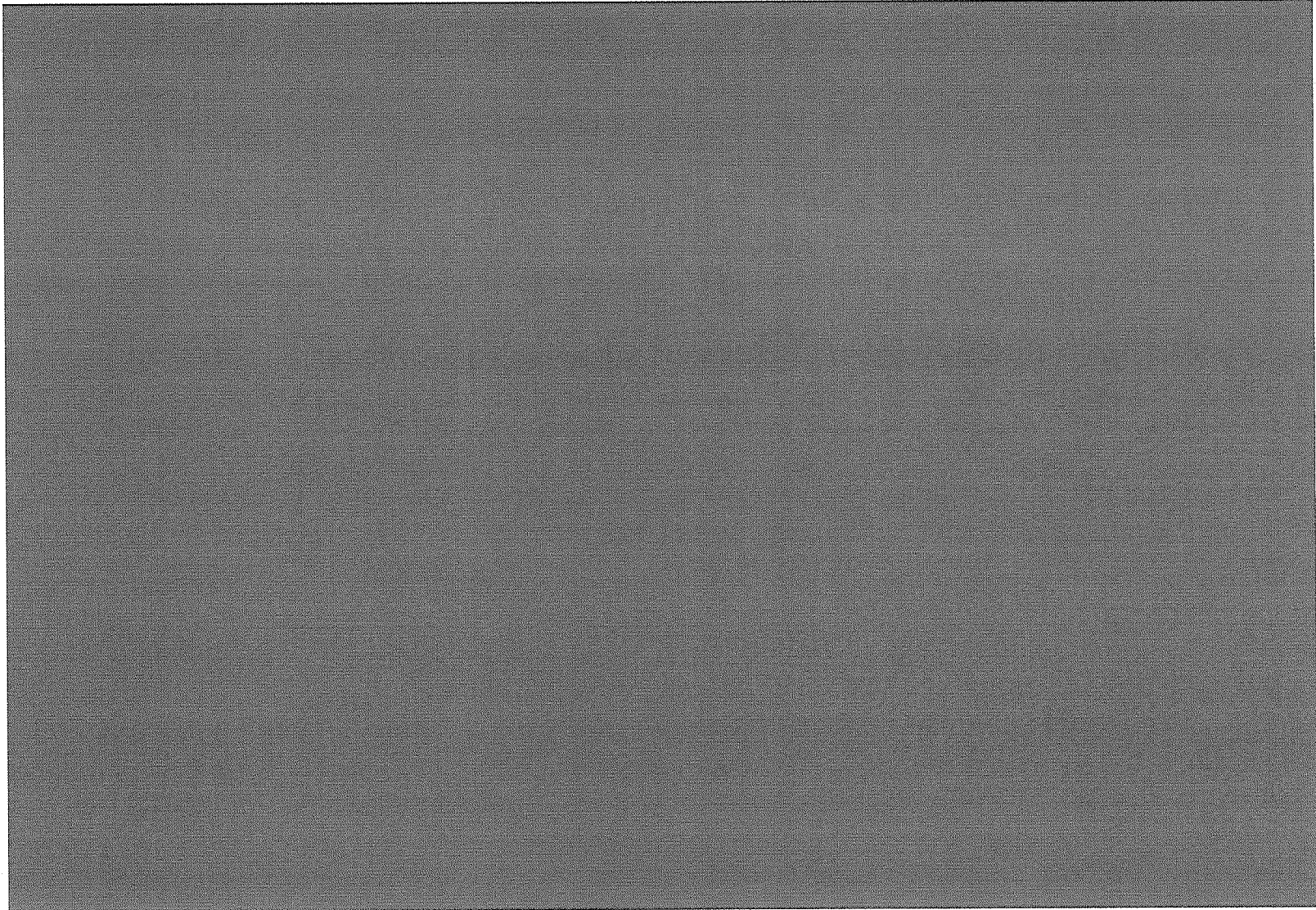
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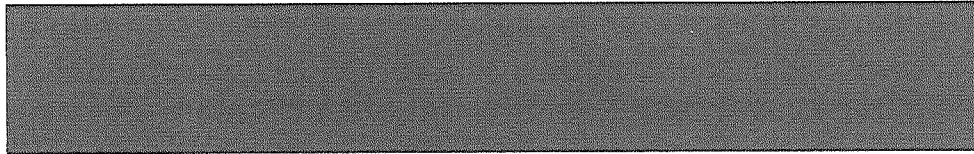
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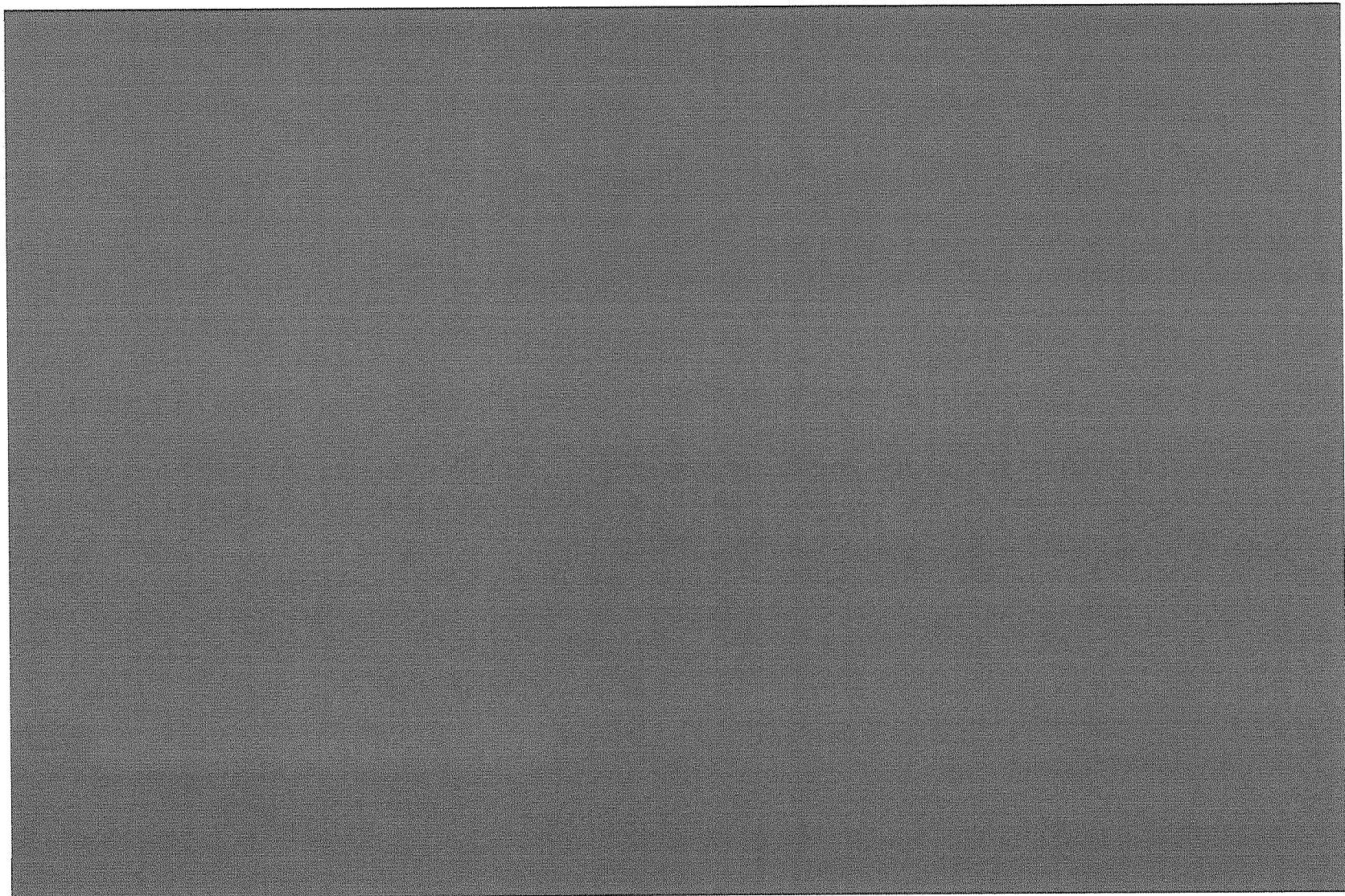
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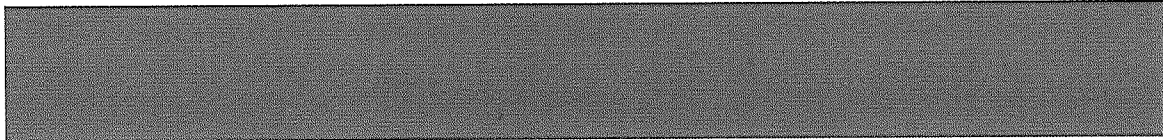
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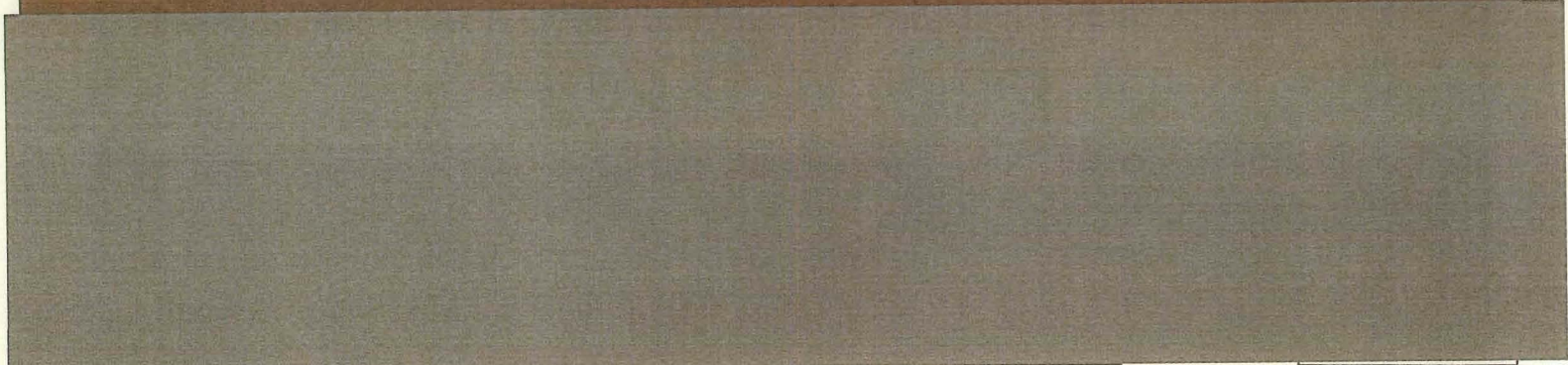
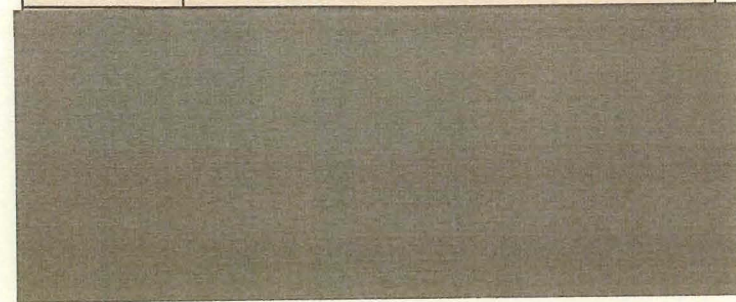
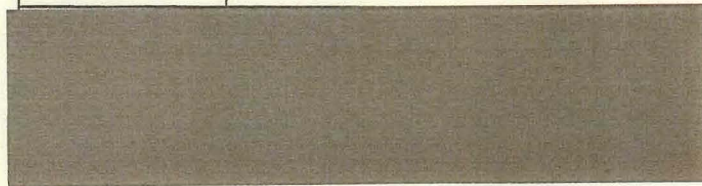
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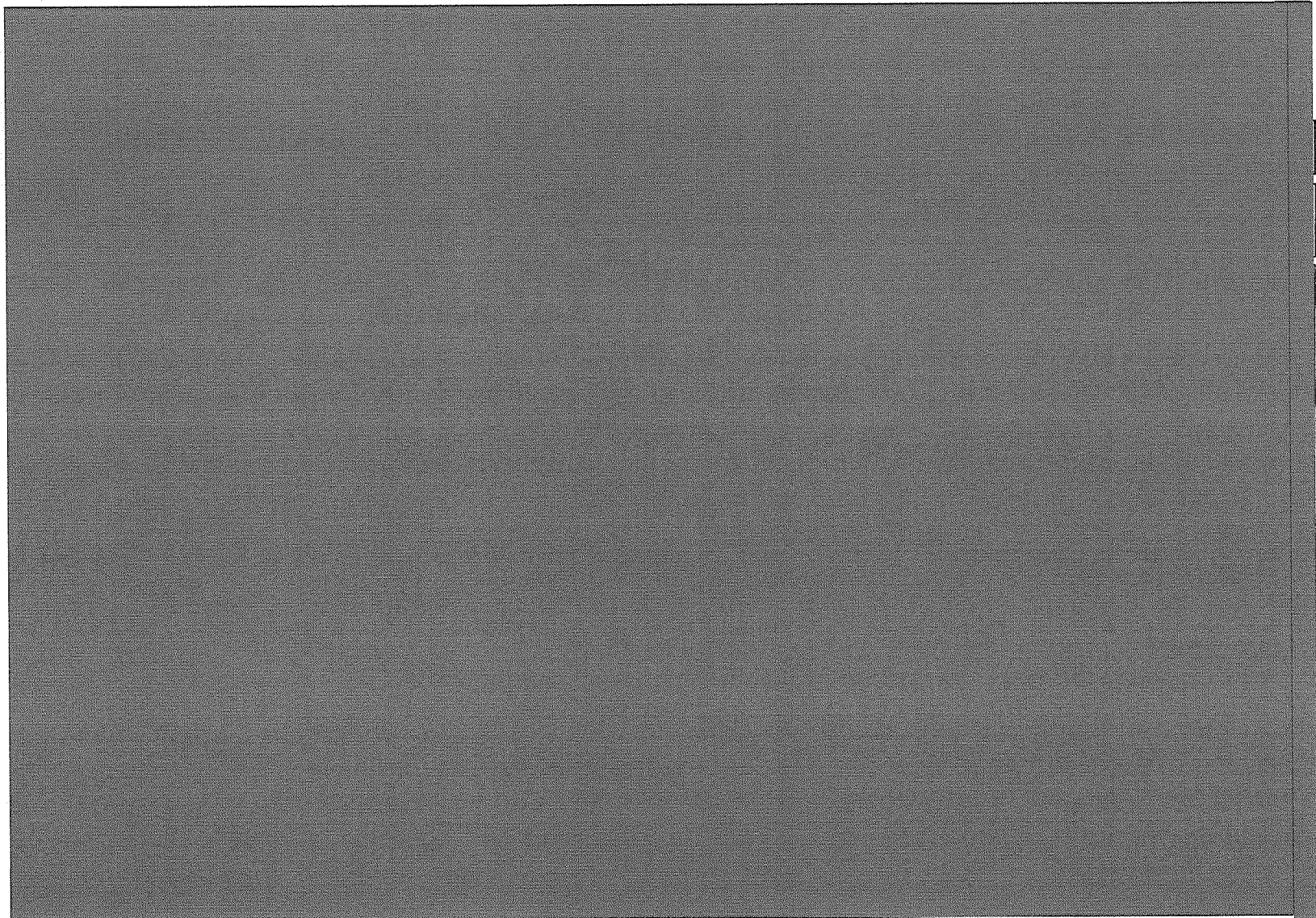
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## Scenario Implications - For Key Plan Components

Moderate Change		<i>Key differences in other scenarios, if any</i>			
		March '10	BAU	Tech	Aggressive
					
Levy	<ul style="list-style-type: none"><li>Preferred resource, but dependent on robust policy support</li></ul>		<ul style="list-style-type: none"><li>Not economic due to low gas and no GHG</li></ul>		
					

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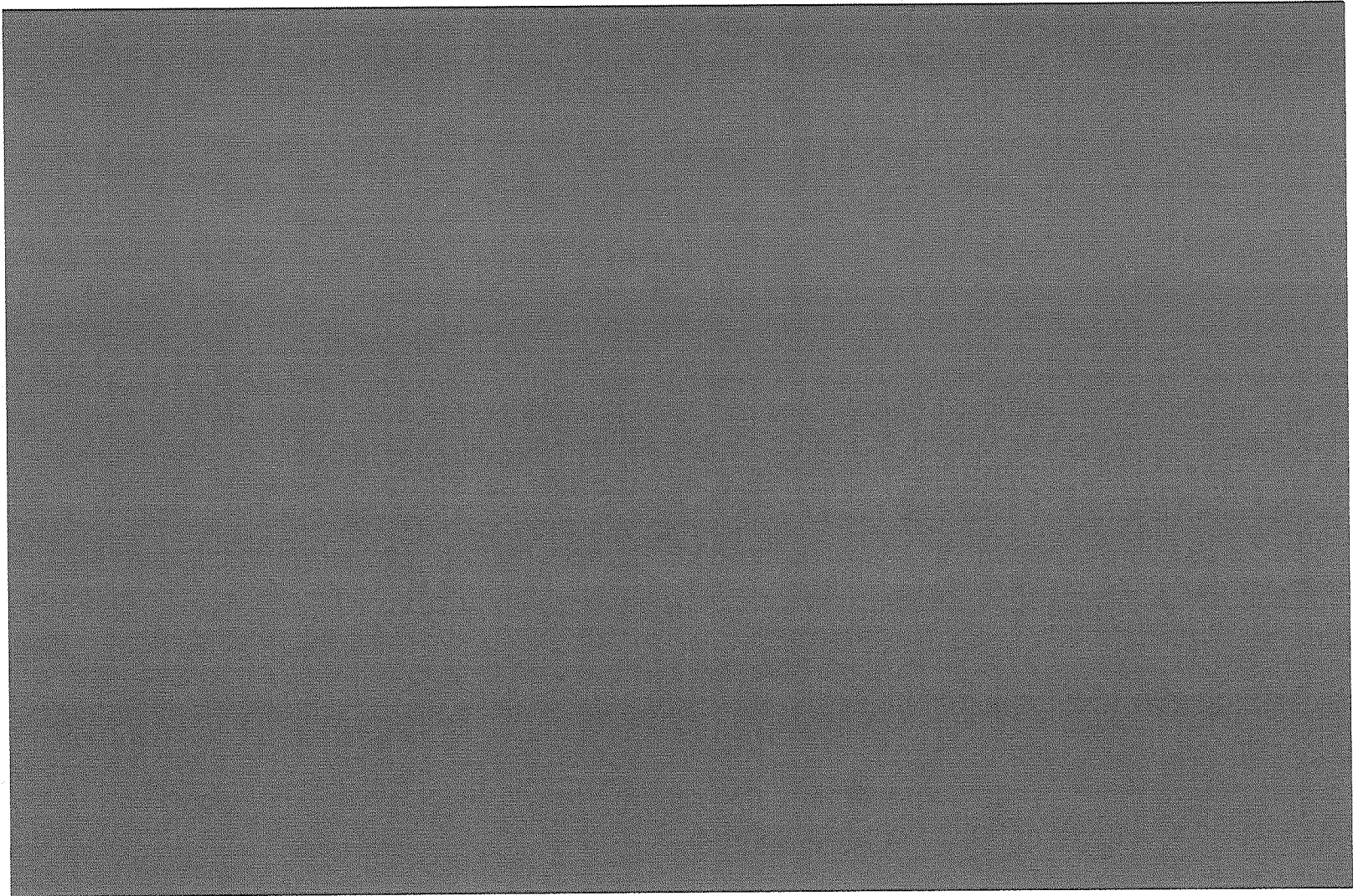


## Strategic Issues and Considerations

Near-Term Decision		Longer-Term Strategy Considerations
[Redacted]		
Levy	<ul style="list-style-type: none"><li>• Secure COL</li><li>• Maintain policy support for nuclear</li></ul>	<ul style="list-style-type: none"><li>• Continue JO negotiations</li><li>• Continue ongoing feasibility analysis</li><li>• Capital markets availability and terms</li></ul>
[Redacted]		

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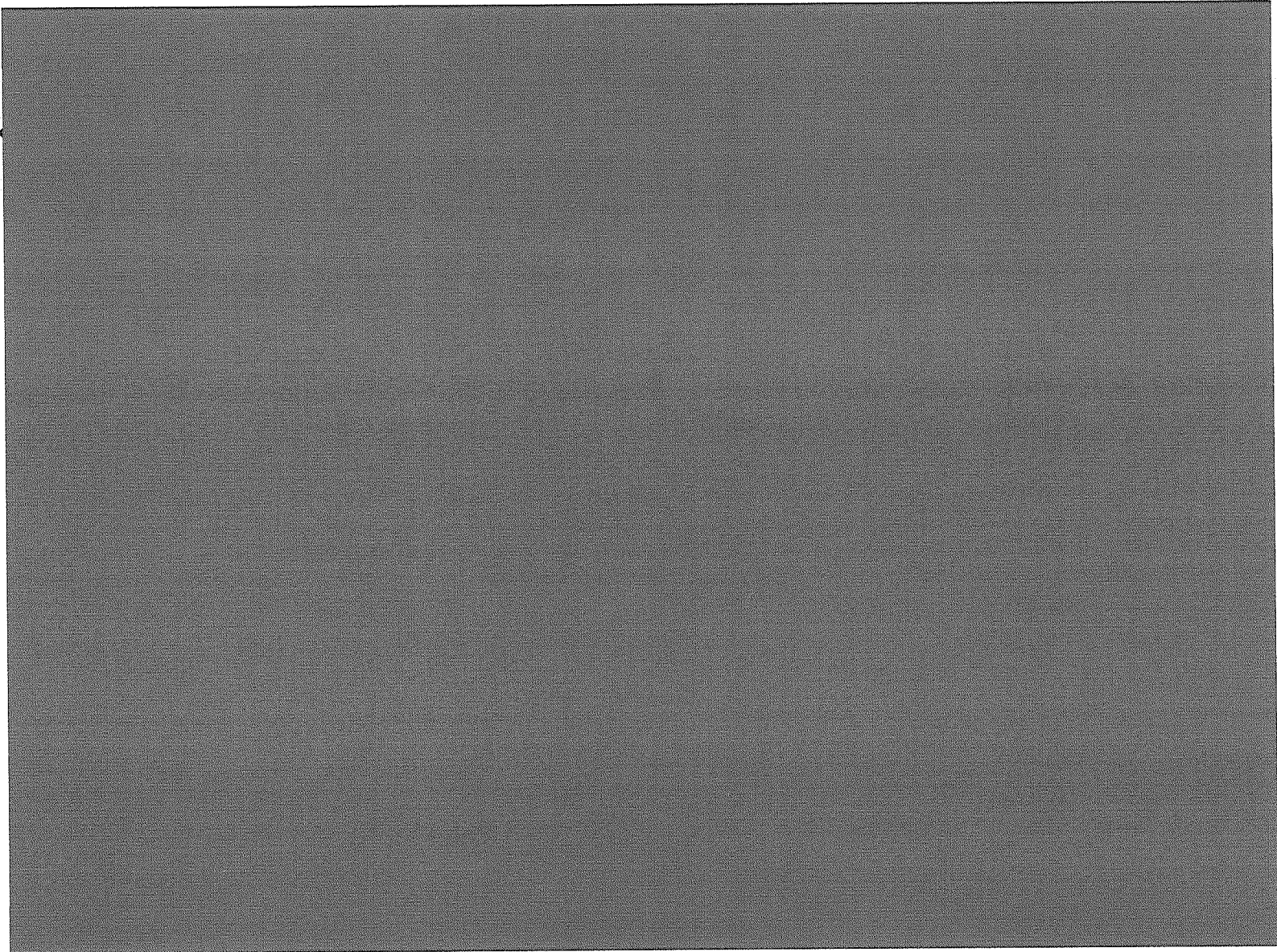


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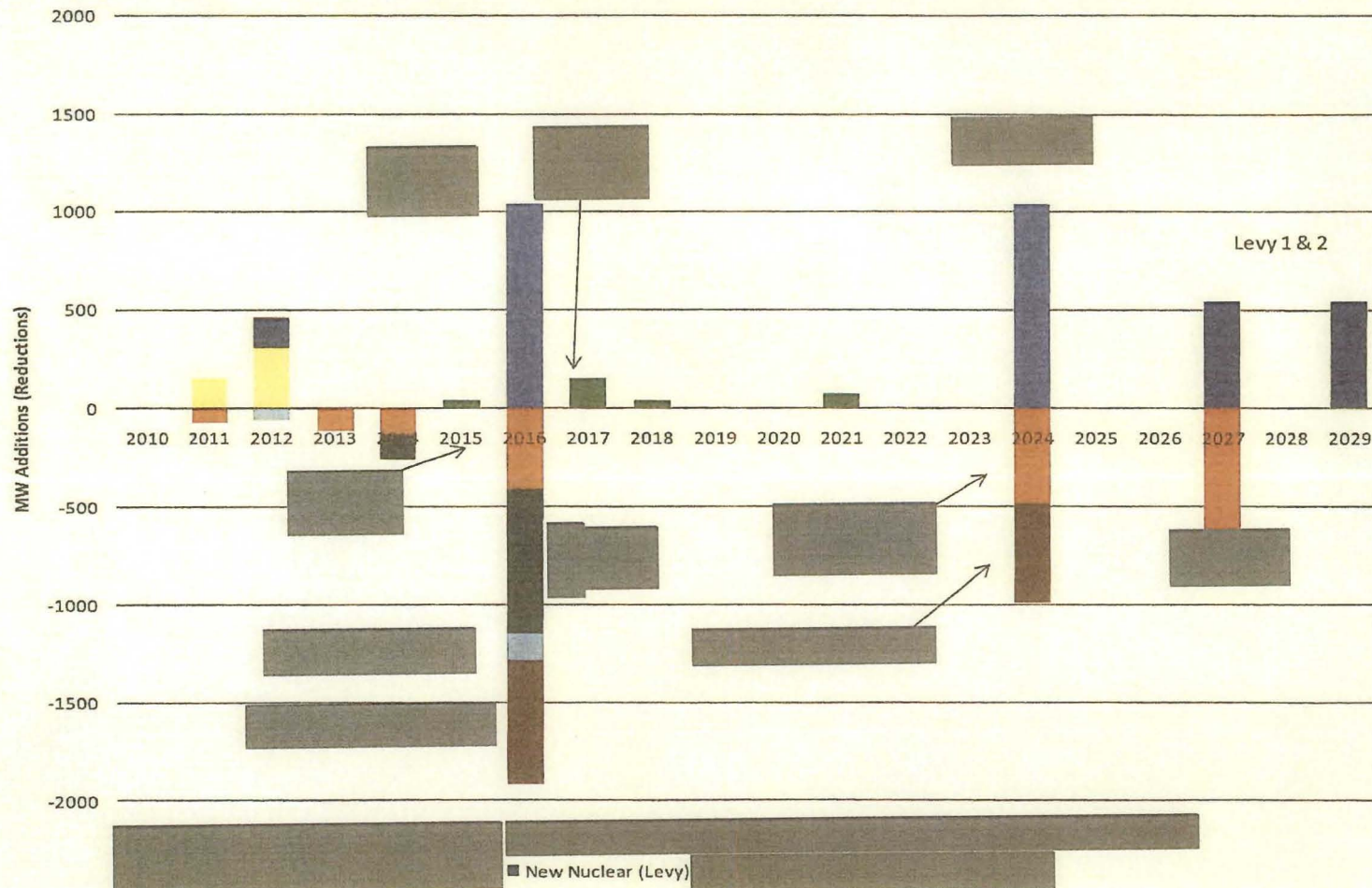


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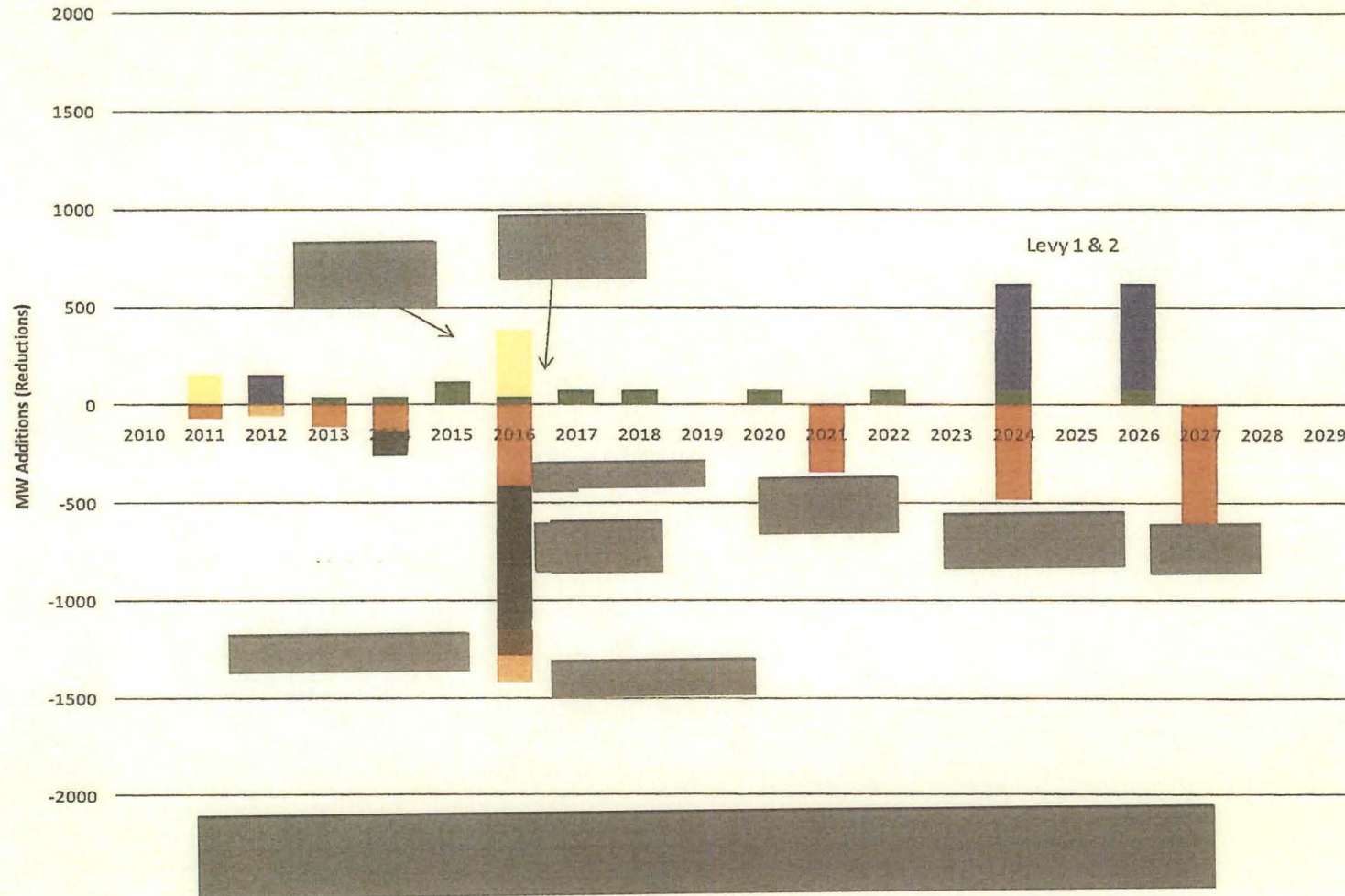


# Scenario: Technology Driven Change Resource Plan



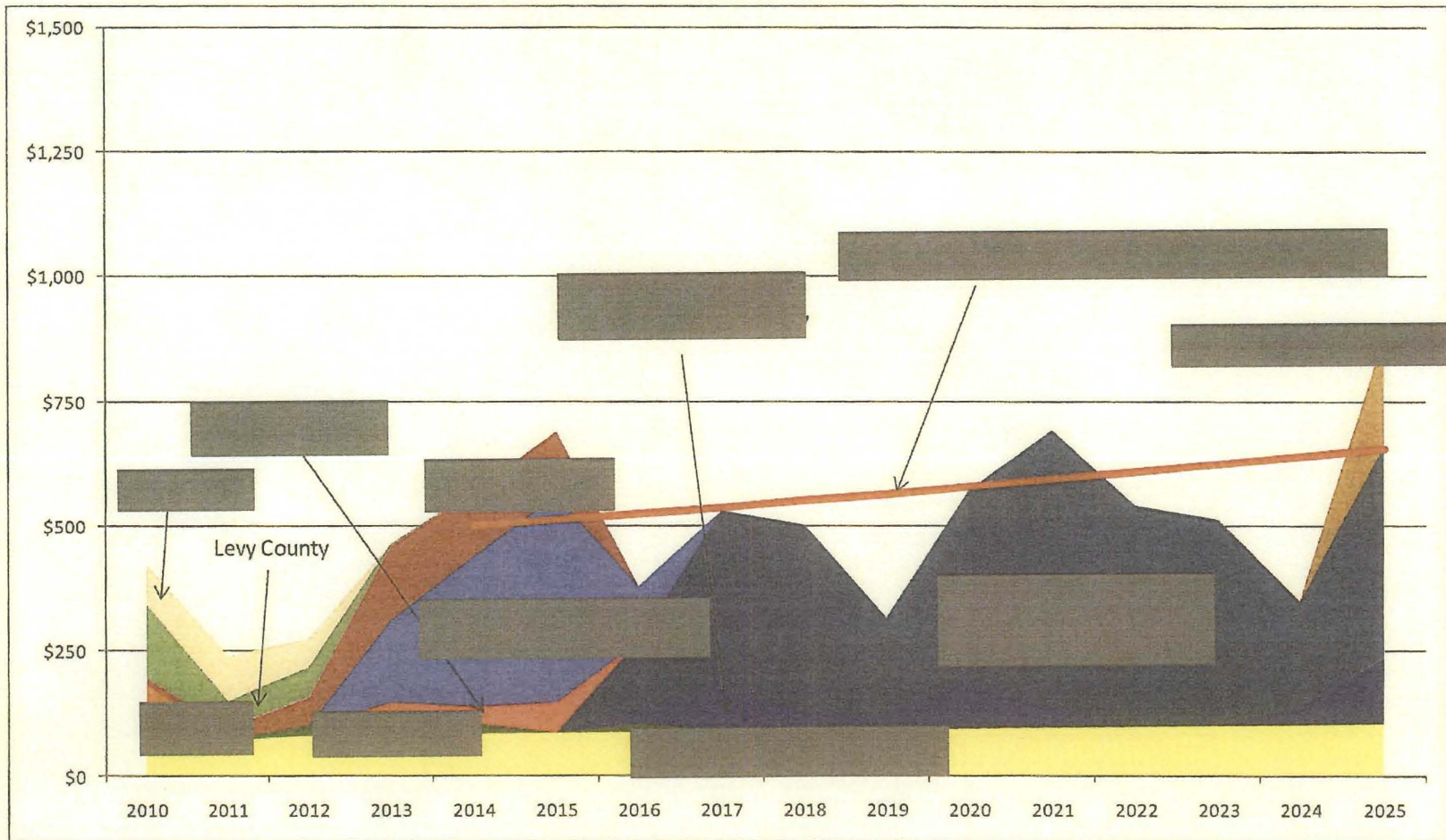


# Scenario: Aggressive Mandate for Change Resource Plan



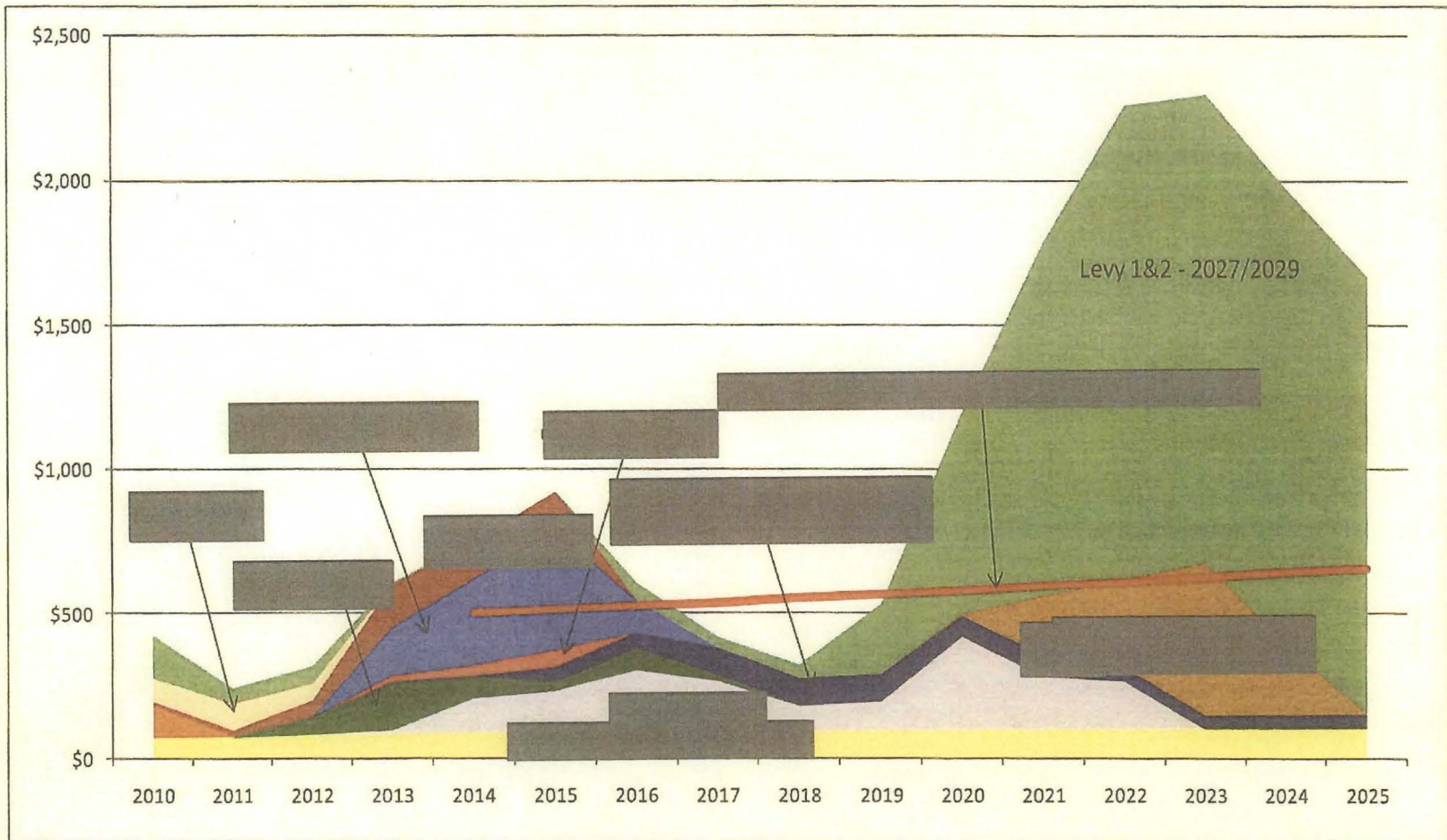
# Scenario: Business as Usual

## Strategic Capital



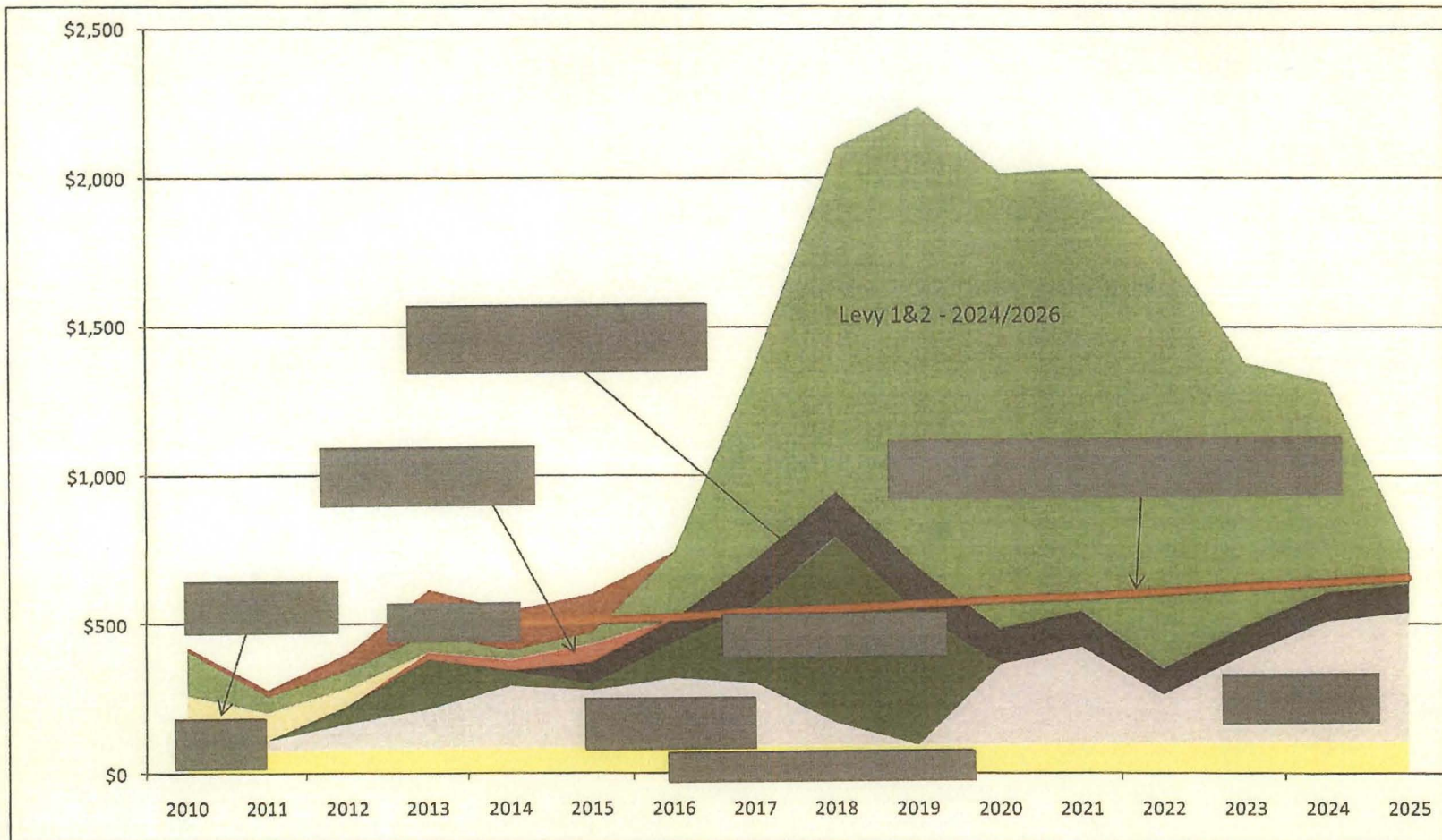
# Scenario: Technology Driven Change

## Strategic Capital



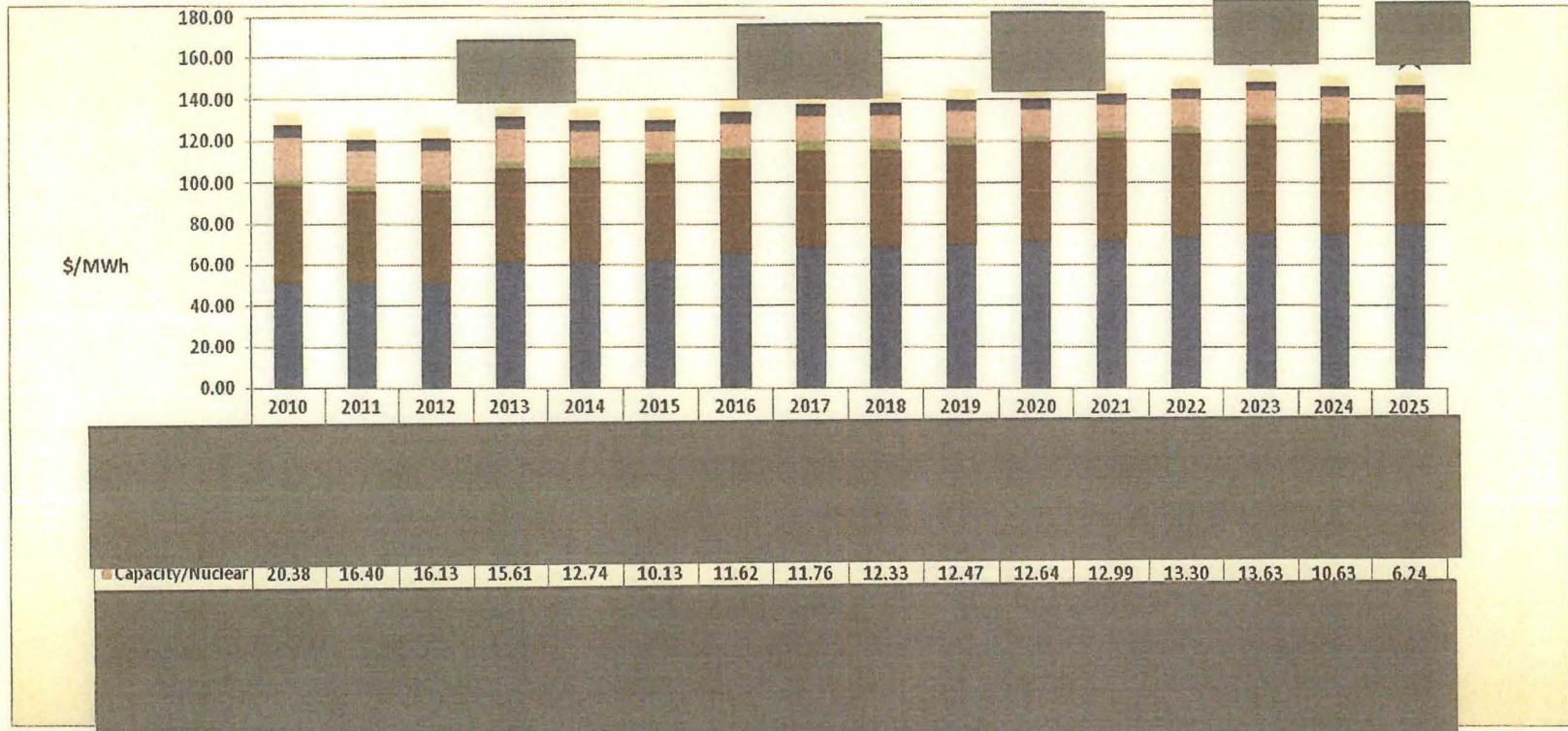
# Scenario: Aggressive Mandate for Change

## Strategic Capital



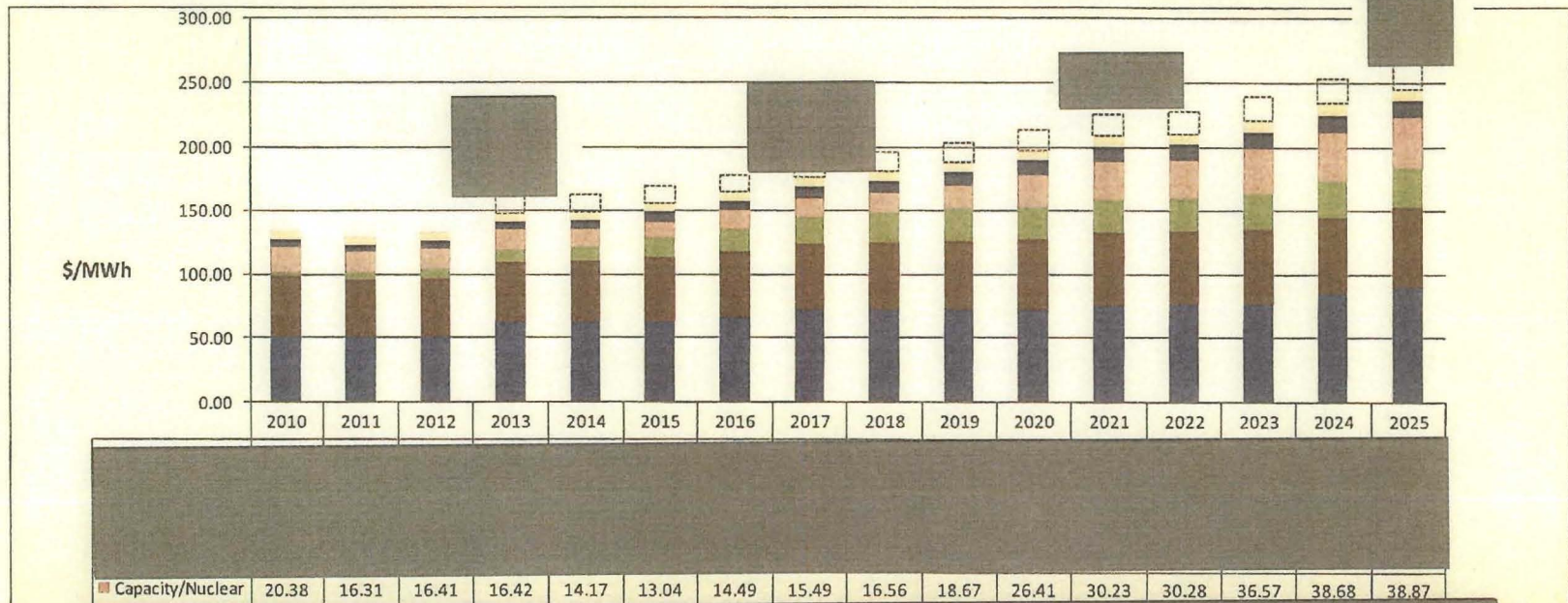
# Scenario: Business as Usual

## Residential Rate for 1,000 kWh



# Scenario: Technology Driven Change

## Residential Rate for 1,000 kWh



# Scenario: Aggressive Mandate for Change

## Residential Rate for 1,000 kWh

