Reforming the Energy Vision

Ned Allis
Matthew Kahn

conEdison Gannett Fleming Excellence Delivered As Promised

Agenda

- Background
  - Regulatory History
  - Electric Industry in New York
  - Future trends and Risks
- Reforming the Energy Vision Initiative
- Depreciation and Tax Implications
- Con Edison Implementation
- The Future of the Industry

conEdison Gannett Fleming Excellence Delivered As Promised

Background

conEdison

Gannett Fleming
Excellence Delivered As Promised

Definitions

- Distributed Energy Resources (DER)
- Distributed Generation (DG)
- Demand Side Management (DSM)
- Independent System Operator (ISO)
- Distribution System Platform Provider (DSPP)

conEdison

Gannett Fleming
Excellence Delivered As Promised

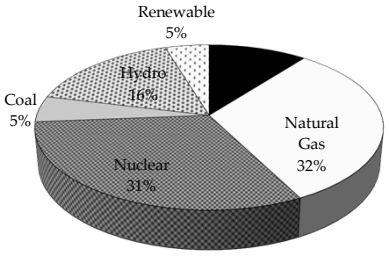
Electric Industry Regulation

- New York Public Service Commission (NYPSC)
  - Formed in 1907
  - Mission to ensure affordable, safe, secure, reliable service, while protecting the environment
  - Oversees electric, gas, water, steam and telecommunications industries
- Electric Utility Historically Regulated as a Natural Monopoly
  - Generation, transmission and distribution
  - Cost of service regulation by NYPSC
  - Centralized generation at large power stations
- NY Electric Industry Restructured in 1990s
  - Generation becomes competitive market
  - Transmission and distribution remain regulated
  - Generation begins to become less centralized

conEdison Gannett Fleming Excellence Delivered As Promised

Electric Industry in New York

- Generating Mix
  - Natural Gas – 32%
  - Nuclear – 31%
  - Hydro – 16%
  - Oil – 11%
  - Coal – 5%
  - Renewables – 5%

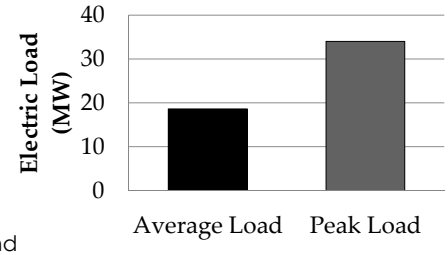


- Residential Electricity Prices
  - 19.76 cents / kWh
  - US average is 12.29 cents / kWh
  - One in eight residential customers is in arrears for over 60 days
  - Over 250,000 customers per year experience involuntary shut-off

conEdison Gannett Fleming Excellence Delivered As Promised

Electric Industry in New York

- Average daily electric load is 18.6 MW
- Peak load is 34 MW
- Utilization < 60%
- Energy loss
  - Line loss – 7-8%
  - Combustion – 50-65%
- 30% RPS by 2015
  - Folded into Clean Energy Fund
- Peak load is growing 5 times faster than base sales



conEdison

Gannett Fleming
Excellence Delivered As Promised

Electric Industry in New York

- Rate base is growing while sales are flat
- Approximately $30 billion will be spent in next decade
  - Compared with $17 billion in previous ten years
- Sales growth projected at 0.16% per year
  - Energy efficiency, other factors
- Many costs therefore must be spread over existing customers

$$Rate = \frac{Revenue\ Requirement}{Sales} \uparrow \rightarrow$$

conEdison

Gannett Fleming
Excellence Delivered As Promised

Future Trends

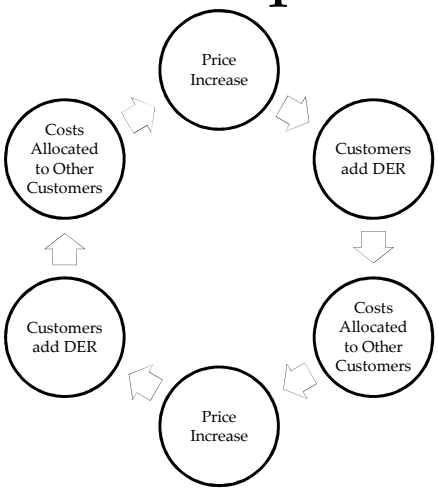
- Future growth of DER could reduce sales growth
  - Reduced demand, DG, etc.
  - Customers could leave the system
- Additional investment required to manage grid

$$Rate = \frac{Revenue\ Requirement}{Sales}$$

conEdison

Gannett Fleming
Excellence Delivered As Promised

"Death Spiral"



conEdison

Gannett Fleming
Excellence Delivered As Promised

Risk - Stranded Costs

- Unrecovered costs associated with Distributed Generation
  - Investment in uneconomic generation and transmission
  - Long term purchased power contracts become uneconomical
  - Regulatory assets such as deferred taxes
- Obsolete technology
  - Meters
  - Customers leave system?

conEdison

Gannett Fleming
Excellence Delivered As Promised

Risk – Cost Shifting

- Customers leave system or impact of net metering
  - Same costs allocated among fewer customers
  - Remaining customers pay higher rates
- How to equitably share costs?
  - Customers that add value (e.g. reduce demand or generate clean energy) should be compensated, but…
  - Customers that do not have DER should not subsidize those that do
- Rate design is important

conEdison

Gannett Fleming
Excellence Delivered As Promised

Reforming the Energy Vision (REV)

conEdison

Gannett Fleming
Excellence Delivered As Promised

Reforming the Energy Vision (REV)

- Governor's Initiative
- Cleaner and more reliable, resilient and affordable energy system
- Objectives:
  - Customer knowledge and tools to manage energy bill
  - Market animation and leverage of customer contributions
  - System wide efficiency
  - Fuel and resource diversity
  - System reliability and resiliency
  - Reduction of carbon emissions

conEdison

Gannett Fleming
Excellence Delivered As Promised

Reforming the Energy Vision (REV)

- Track I
  - Develop distributed resource markets
  - Establish role of utility
  - Order issued February 26, 2015
- Track II
  - Establish ratemaking
  - Staff white paper issued July 28, 2015

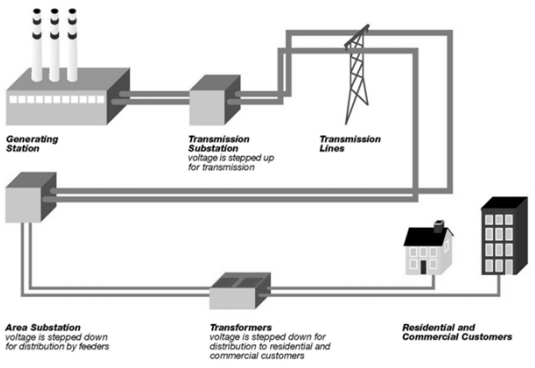
conEdison

Gannett Fleming
Excellence Delivered As Promised

Traditional Electric Grid

conEdison

Electric Generation to Customers



conEdison

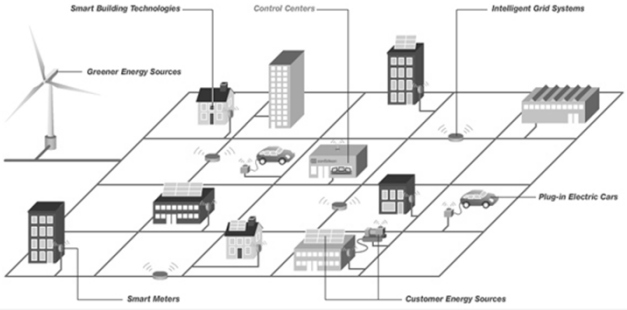
Gannett Fleming
Excellence Delivered As Promised

Future Electric Grid

conEdison

Smart Grid

Smart grid puts information and communication technology into electricity generation, delivery, and consumption, making systems cleaner, safer, and more reliable and efficient.

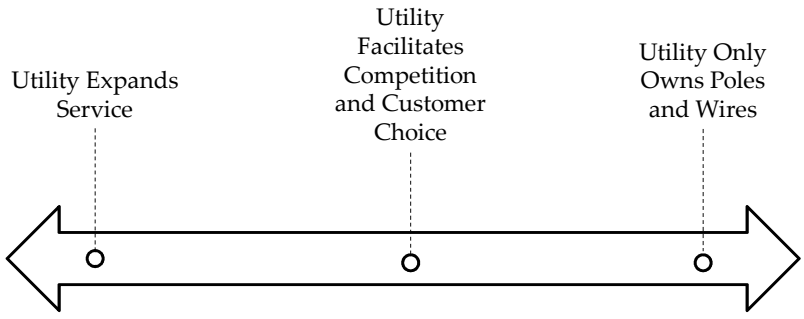


conEdison

Gannett Fleming

Excellence Delivered As Promised

Possible Models



conEdison

Gannett Fleming

Excellence Delivered As Promised

1. Utility Expands Service

- Benefits
  - Utility obligated to serve, deliver energy efficiency, renewables, storage, etc. with reasonable rates
  - Costs regulated by commission
  - Financial stability and reliability
  - Additional revenue for utility
- Disadvantages
  - Could limit innovation and customer choice
  - Higher costs could lead to higher rates
  - Planning challenges

conEdison Gannett Fleming Excellence Delivered As Promised

2. Utility as DSPP

- Key difference is utility facilitates competition on the grid, but does not manage all grid operations
- Benefits
  - Additional opportunities for utility to earn revenue
    - Access, data, billing, etc.
    - Can be combination of COS, fee-based, incentive based, etc.
  - Other parties can provide new services
  - More innovation and customer choice
- Disadvantages
  - Competitive issues – market may not serve all areas or services
    - E.g. third parties serve profitable areas and utilities must serve least profitable areas
  - Reliability, integrating third parties to grid
  - Planning challenges

conEdison Gannett Fleming Excellence Delivered As Promised

3. Utility Only Owns Poles and Wires

- Different models
  - Can include third-party grid operator
- Benefits
  - Potential for innovation
  - More customer choice
- Disadvantages
  - Reliability concerns
    - E.g. Utility cannot add generation (maybe even storage) to support grid
  - Planning can be more challenging
    - Third parties may drive investment decisions
  - Market issues
  - May limit utility scale renewables or storage

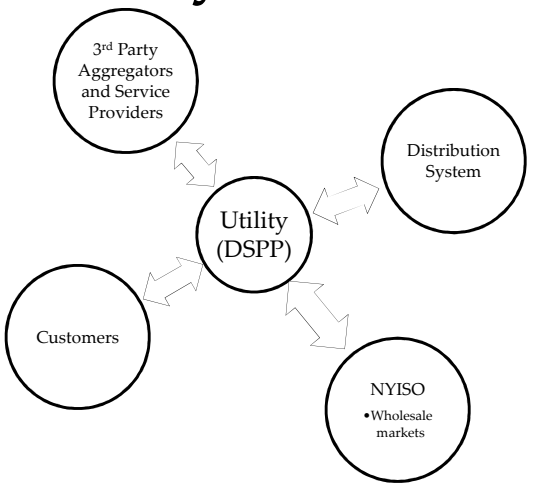
conEdison Gannett Fleming Excellence Delivered As Promised

REV Conceptual Framework

- Track I Order envisions utility as DSPP (Distribution System Platform Provider)
  - Responsible for reliability
  - Functions to enable distributed markets
  - Utility is interface to:
    - Technology innovators and third party aggregators
    - Customers
    - DER providers
    - Distribution System
    - NYISO
      - Wholesale supply markets

conEdison Gannett Fleming Excellence Delivered As Promised

Utility as DSPP



conEdison

Gannett Fleming
Excellence Delivered As Promised

REV Ratemaking

- Track II Order
  - Staff white paper issued July 28, 2015
  - Rate design and ratemaking reforms
- REV envisions gradual reforms
  - Pricing the value of DER
  - Peak demand pricing
  - Current model favors capital over operating expense
  - Market Based Earnings (MBE)
  - Incentives
  - System Efficiency
  - Additional revenue sources for DSPP

conEdison

Gannett Fleming
Excellence Delivered As Promised

Revenue Requirement

- Traditional Model
  - Capital – Utility receives return of and earns return on
  - Expense – Pass-through cost
  - Decisions not always aligned with economic efficiency
- REV
  - Utility will require more spending on non-capital
  - Utility will be more dependent on third-party capital
  - Need to allow mechanism to earn on all spending
    - Or at least utility should be indifferent

conEdison Gannett Fleming Excellence Delivered As Promised

Rate Design

- "Appropriate Value Signals"
- Traditional residential customer is charged average rate for each unit of energy consumed
  - Cost of energy changes based on time of day and time of year
- REV envisions rates with greater weight on peak demand
  - Goal is to allow customers to "reduce their individual bills while at the same time supporting a lower cost system in New York"

conEdison Gannett Fleming Excellence Delivered As Promised

Value of DER

- DER provides energy to the system
  - Location-based Marginal Price of Energy (LMP)
- DER may provide value of long-term avoided costs
  - Value of DER to distribution system (D)
- Total value of DER = LMP + D
- REV will move towards LMP + D
  - Will retain net metering, at least initially

conEdison Gannett Fleming Excellence Delivered As Promised

Market Based Earning

- Platform Service Revenues (PSR)
  - Services provided as DSPP
- Market Based Services
  - Customer connection to online portal
  - Data analysis
  - Co-branding
  - Transaction and/or platform access fees
  - Optimization or scheduling services
  - Advertising
- Value Added Services
  - Engineering financing
  - Engineering services for microgrids
  - Enhanced power quality services

conEdison Gannett Fleming Excellence Delivered As Promised

Depreciation and Tax Implications

conEdison

Gannett Fleming
Excellence Delivered As Promised

Depreciation Implications

- Stranded Costs
  - Meters
  - Generation
  - Transmission?
  - Customers leave system?
- New devices
  - e.g. switches, voltage devices
  - IT and communication equipment
  - May have different lives than existing assets
    - Subaccounts?
- Impact on service lives
  - Some assets may have more retirements, shorter lives
    - e.g. more devices on poles or need to accommodate two-way flow
  - Some assets may have extend lives

conEdison

Gannett Fleming
Excellence Delivered As Promised

New York Depreciation Practices

- Whole Life
  - Reserve Adjustment Occasionally Used
- h-Curves
- NYPSC Staff and other parties have proposed to defer net salvage costs
- NYPSC Staff and other parties have proposed long service lives

conEdison Gannett Fleming Excellence Delivered As Promised

Property Tax Implications

- Property Tax Issues related to Renewables and Distributed Generation
  - Cost Basis Property Tax
    - New York Formula
      - Reconstruction cost new less depreciation
  - Depreciation includes obsolescence
    - Economic
    - Functional
  - Utility property values impaired by Distributed Generation
  - Reduced revenues from property tax
    - Homeowners to receive a heavier burden?
    - Property Tax System to be altered or replaced
      - Gross Receipts Tax?

conEdison Gannett Fleming Excellence Delivered As Promised

Net Metering Tax Implications

- Is customer generated electricity sold to the utility?
  - Taxable income to utility?
    - Can we measure income under net metering?
    - Upon cash settlement?
  - Not eligible for Like Kind Exchange under IRC Sec. 1031(a)(2)(A)
  - Barter Transaction?
  - Does utility have a Form 1099 reporting requirement?
    - EEI currently seeking a private letter ruling stating no Form 1099 requirement
- Sales Factor Apportionment
  - Regulatory model selected will drive the factor
  - How is the purchase of electricity from customer sourced?
    - Tangible vs. Intangible
    - Tracking Destination

conEdison Gannett Fleming Excellence Delivered As Promised

Sales Tax Implications

- Ancillary Services
  - Services to manage solar energy generation
  - Energy efficiency reporting
  - In-home diagnosis
  - Monetizing data
  - Upgrade services for customer systems
- Installation Services
  - Form of payment to utility
    - Installment sale
    - Lease agreement
    - Purchase Power Agreement

conEdison Gannett Fleming Excellence Delivered As Promised

Consolidated Edison Implementation

conEdison

Gannett Fleming
Excellence Delivered As Promised

Consolidated Edison Implementation

- Initial Phase of REV
- Efficiency Transition Implementation Plan ("ETIP")
  - Bridge from current energy efficiency program to more demand-side efforts under REV
- Demonstration Projects
  - Pomona
- Distributed assets
  - 2.3 MW Solar Energy Project built on capped landfill
  - 1200 solar installations on the system
- AMI
  - Enable customers to participate in DER programs
  - Empower customers to manage their energy profile

conEdison

Gannett Fleming
Excellence Delivered As Promised

Pomona Demo Project

- 4.5 MW load growth in the area
- Defer construction of new substation by 2019
  - Approx. $60 million investment
  - Approx. $9.5 million in DER solutions
    - AMI
    - Targeted energy efficiency
    - Demand response
    - Customer behavior modification strategies
    - Clean Distributed Generation
    - Energy Storage

conEdison

Gannett Fleming
Excellence Delivered As Promised

The Future of the Industry

conEdison

Gannett Fleming
Excellence Delivered As Promised

The Future

- How fast will change occur?
- How will customers respond?
- How to price "value" and allocate costs?
- Role of Utility?
  - May be different for states that are fully regulated vs. competitive generation
- Increase in Renewables / Distributed Generation
- Energy Storage

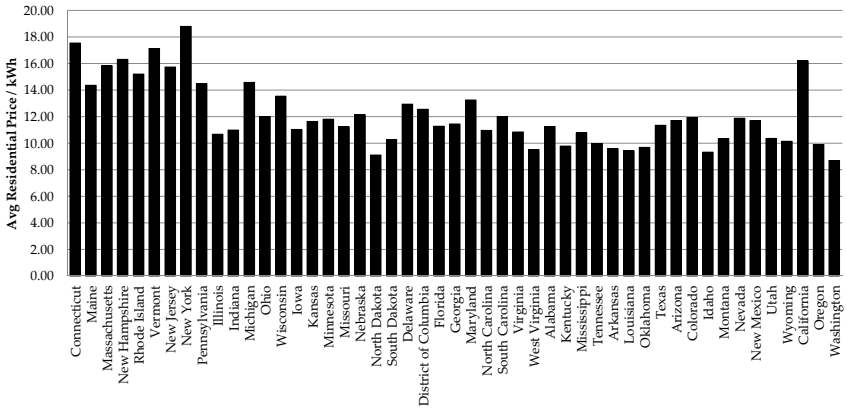
conEdison

Gannett Fleming
Excellence Delivered As Promised

The Future

May vary based on local conditions

Average Residential Price of Electricity, Lower 48 States (2013)



conEdison

Gannett Fleming
Excellence Delivered As Promised

Other Examples

- United Kingdom
  - RIIO Regulation (2013)
    - **R**evenue = **I**ncentives + **I**nnovation + **O**utputs
    - Base Revenue using *efficient* total expenditures
    - Adjusted during rate period for incentives and innovation
- European Union
  - Germany
  - Spain
- California
- Hawaii
- Arizona

conEdison Gannett Fleming Excellence Delivered As Promised

Challenges

- Make investments while keeping electricity affordable
- How to price "value"?
- How to allocate costs?
- Minimize shifting of costs
- Reliability
- Markets
- Stranded costs
- Utility credit quality and ability to raise capital

conEdison Gannett Fleming Excellence Delivered As Promised

Opportunities

- Manage peak demand
  - DSM
  - Storage
- More efficient electric grid
- Electric Vehicles
  - Increase sales growth
- Cleaner energy portfolio
- Other revenue sources for utility
- Opportunities for customer choice

conEdison

Gannett Fleming
Excellence Delivered As Promised

Questions?

conEdison

Gannett Fleming
Excellence Delivered As Promised