Public Policy, Public Utilities and Pursuit of the Public Interest

Colorado School of Mines
October 24, 2019

Jeffrey Ackermann, Chair
Colorado Public Utilities Commission
Disclaimers...(they’re everywhere)
Who am I? (As it pertains to the topic)

- Currently: Chair, Colorado Public Utilities Commission
- Past: Executive Director, Colorado Energy Office
  - Other governmental, nonprofit & corporate energy-related experience
- Education:
  - Master of Nonprofit Management
  - Bachelor of Arts: Environmental/Economic Policy
Objectives/Desired Outcomes

- Reframe “Public Policy”
  - Underlying principles & self-reflection

- Understand why electric utilities are regulated
  - Markets and Monopolies

- Explore specific, contemporary, public policy/public utility issues
  - Satisfying customer desires
  - Incorporating climate impacts
Setting a Context RE: Politics

- Principles
- Politics (and the resulting Policies)
- Practices (the mechanics of governance)
Principles: underlying values, ethics, philosophies...

- Pertinent to Energy Sector and Beyond:
  - The PRODUCTION of society
    - Market structure; distribution of resources; wealth; role of labor; standard of living
  - The POSITION of the individual within humanity
    - Social Order; emphasis upon the individual vs. the collective
  - The POWER within the social order
    - Its distribution; the civic structures/functions; decision making
  - The PURPOSE of humanity, regarding the environment
    - Dominion >>> Stewardship

From Bedrock to Topsoil: federal and state statutes; local ordinances

Bringing it All to Life: executive government; regulations*

* Can be of a policy nature (deferred from legislature) or procedural.
Principles >>>> Policies >>>> Practices

- Tactics and Processes
- Implementing the Letter (and Spirit) of the Law
Applying Principles >>> Policies >>> Practices to Colorado’s Energy Sector
Energy Resource/Mineral Extraction

- **Principles**
  - Production: Public vs. Private Goods
  - Position of the Individual: Private Property
  - Purpose of Humanity: Dominion & Quality of Life

- **Policies**
  - “Methane Rule” (Hickenlooper: 2014)
  - State v. Local Land Use & Dispute Resolution

- **Practices**
  - State/Local ballot initiatives & ordinances (2014-)
  - COGCC regulatory practices - 2019 reconfiguration
Energy & Environmental Protection

- **Principles**
  - Purpose: Balancing humanity’s impact on the environment
    - Caring for “The Commons”
  - Production & Position: “My” vs. “Our” Standard of Living

- **Policies** (reflecting “Power”)
  - Federal Air Quality Statutes
  - Amendment 37: Renewable Energy Standard (& successors)

- **Practices**
  - EPA and CO Dept. of Public Health & Environment
  - CO Public Utilities Commission
Public Utility Regulation

- Broad, Contextual Overview:
  - Why: Historical, legal, policy framework
  - How: A bit about the process

- The Colorado PUC
  - Legislative v. Judicial Functions
  - Pursuing the “Public Interest”
Pearl Street Station, Manhattan

- 1882: First power plant in the U.S.
- Edison Illuminating Co.
- Initial Load: 400 lamps; 85 customers
- 1884 Load: 10,000 lamps; 500 customers
Thomas Edison,
1880: patent for electrical distribution system
(AC current based)

George Westinghouse,
Westinghouse Electric Co.
- (AC current based)

Samuel Insull,
(“The Merchant of Power”)
- Demand meter billing
- Two-tiered rates
- Grid expansion
- Holding Co. development
- (Commonwealth Edison)
The Socio-Economic Context
“Wealth of Nations” (1776)

- Articulation of market principles
- Argumentation in favor of “free market economies”
- “Invisible hand” — through pursuit of personal gain the public interest is promoted (without awareness or intent)
- No identifiable role for government within the market
Market “Failure” and the Need for Government Intervention

- Oligopoly – market of a few suppliers
- Monopoly – single supplier
Electric System Structure – General Context

1. Electric Generating Station
   - Station switchyard
   - Overhead transmission lines (230,000 volts)

2. Receiving Station
   - Underground transmission lines
   - Distribution lines (12,000 volts)
   - Sub-transmission lines (69,000 volts)

3. Distribution Station
   - Underground service line
   - Pad-mounted transformer

4. Residential Customer
   - Industrial Customer
   - Commercial Customer

http://www.foresthiker.com/?page_id=1586
Electric System Structure – General Context

Color Key:
- Red: Generation
- Blue: Transmission
- Green: Distribution
- Black: Customer

Generating Station

Transmission lines
765, 500, 345, 230, and 138 kV

Substation Step Down Transformer

Subtransmission Customer
26 kV and 69 kV

Primary Customer
13 kV and 4 kV

Secondary Customer
120 V and 240 V

Generating Step Up Transformer

Transmission Customer
138 kV or 230 kV

https://en.wikipedia.org/wiki/Electric_power_transmission#/media/File:Electricity_grid_simple-North_America.svg
Electricity Market Development
Three Forms of Utilities

1. Investor-Owned Utilities (2)
   - Black Hills Colorado Electric
     - 96,000 electric customers
   - Public Service Company of Colorado (Xcel Energy)
     - 1.4 million electric customers

2. Cooperatives (29)
   - Tri-State Generation & Transmission (mostly)

3. Municipalities (27)
   - Colorado Springs Utilities
   - Fort Collins Utilities (member of Platte River Power Authority)
Municipal Utilities (29 “Munis”)

- City of Aspen
- City of Burlington
- City of Center
- City of Colorado Springs
- City of Delta
- City of Fort Collins
- City of Fort Morgan
- City of Fountain
- City of Glenwood Springs
- City of Gunnison
- City of Holyoke
- City of Julesburg
- City of La Junta
- City of Lamar
- City of Las Animas

- City of Longmont
- City of Loveland
- City of Springfield
- City of Trinidad
- City of Wray
- City of Yuma
- Town of Estes Park
- Town of Fleming
- Town of Frederick
- Town of Granada
- Town of Haxtun
- Town of Holly
- Town of Lyons
- Town of Oak Creek
Rural Electrification as Public Policy
Rural Electric Cooperatives (28 Co-ops)

- Delta Montrose Electric Assn
- (Deseret Generation & Trans.)
- Empire Electric Assn, Inc
- Grand Valley Rrl Pwr Line, Inc
- Gunnison County Elec Assn.
- High West Energy, Inc
- Highline Electric Assn
- Holy Cross Electric Assn, Inc
- Intermountain Rural Elec Assn
- K C Electric Assn
- La Plata Electric Assn, Inc
- (Moon Lake Electric Assn)
- Morgan County Rural Elec Assn
- Mountain Parks Electric, Inc
- Mountain View Electric Assn, Inc

- Poudre Valley R E A, Inc
- San Isabel Electric Assn, Inc
- San Luis Valley R E C, Inc
- San Miguel Power Assn, Inc
- Sangre De Cristo Elec Assn Inc
- Southeast Colorado Power Assn
- Southwestern Electric Coop Inc
- (Tri-County Electric Coop)
- United Power, Inc
- Wheatland Electric Coop, Inc
- White River Electric Assn, Inc
- Y-W Electric Assn Inc
- Yampa Valley Electric Assn Inc

(  ) = Non-CO coop, serving in CO
Government as Utility: Public Power

Power Marketing Areas

FDR at Grand Coulee Dam; 1937
Issues of National Grid Interconnectivity

Source: NREI reprinted in Vox.com
Non-profit, member-driven

Supplying bulk of resources to 43 co-ops

Premise: Only limited PUC oversight needed
  - Self-governing
  - No profit motive

Emerging public policy issues:
  - Members seeking exit
  - 2019 Law: PUC regulates gen resource plans
PUC Regulatory Process
“Pillars of Regulation”

The Colorado Public Utilities Commission serves the public interest by effectively regulating utilities and facilities so that the people of Colorado receive safe, reliable, and reasonably-priced services consistent with the economic, environmental and social values of our state.

(PUC Mission as posted on the DORA/PUC web site)

- Safety
- Reliability
- Price/Rate Reasonableness
- Opportunity to Earn a Fair Rate of Return
• CO Constitution, Article XXV
  • Vests authority in PUC, via General Assembly
  • Restricted to Investor-Owned Utilities (mostly)

• Enabling statute (40-3-101, C.R.S.):
  • rates shall be “just and reasonable”

• Jurisprudence—balancing consumer and producer interests
  — seeking the “public interest”
Court Interpretations of Colorado Utility Regulation Statutes

• Duty of PUC: protect **public interest**

• Primary purpose: insure that rates are not excessive or unjustly discriminatory

• Assure rate reasonableness
  – Consumers’ League v. Colo. & S. Ry., 53 Colo. 54, 125 P. 577, (1912)

• “fair, just and reasonable” is a matter of judgment or discretion
Quasi-Judicial, Quasi-Legislative
The Regulatory Process - Judicial

General Commission Process
8.26.2019

Outside Action
Commissioners w/ Advisors & Ag Counsel (or via ALJs)
Deem Complete
Accept / Reject
Set for Hearing
Rule / Decide

Petition

Outside Action
Petition to Intervene & Responses

Commissioners w/ Advisors & Ag Counsel (or via ALJs)
Approve
Deny

Jurisprudence / Litigation
Set for Hearing (& suspend tariff)
- C3
- ALJ
- Hearing Commitee

Written testimony
(several rounds)
Stipulated Settlement
Evidentiary Hearing

Deliberation & Recommended Decision

Commissioners w/ Advisors & Ag Counsel (or via ALJs)

Outside Action
Rehearing, Reargument or Reconsideration

District Court for Appeal
The Regulatory Process - Legislative
PUC and the Public Interest

- “...to be affected with a public interest...”
  - *Munn v. Illinois;* U.S. Supreme Court; 1877 (grain elevators)

- The “Regulatory Compact”
  - Obligation to serve, in exchange for government promise...
    - Cost recovery/compensation via rate setting

- Public Interest
  - Static concept: underlying principles: safe; reliable; cost effective
  - Dynamic concept: myriad factors within decision making
Decision Making Theory and Practice
  - Quick Exercise... planning a vacation

Optimizing of Competing Objectives, and Modeling
  - Identifying criteria
  - Ranking
  - Optimizing
Electric Resource Planning (ERP)

- ERP as a demonstration of:
  - Regulatory process
  - Applied public policy
  - Pursuit of the public interest
● Outgrowth of procurement oversight

● Added complexity…
  ○ From “least-cost” to “price-value”

● Determine Needs & Best Way to Address
Decision Making/Optimization Electric Utility Regulation and:

- Selecting New Generation Resources
- Engaging with neighboring utilities
- Incorporating evolving customer pursuit of self-generation/storage

What is the “public interest” being pursued in the decision?

- “Fairness” and the “regulatory compact”
- Producer vs. Consumer dynamics, and protections
- Environmental/climate concerns, and future generations
Questions to be Addressed in an ERP

- What is the load (demand) forecast?
- What factors will most affect selection of new generation resources?
  - Price of fuel (natural gas), and volatility
  - Air quality/emissions reduction requirements
- What discount rate to use in analyses?
- What are reasonable expectations upon existing resources?
- Who should own new resources?
Figure 1.1-1 High Level 2016 ERP Process Overview

1. Sales Forecast

2. 2017 RE Plan:
   - Determines Need for:
     1. Retail DG;
     2. Wholesale DG;
     3. Non-DG Resources

3. Existing Renewable Resources

4. No Further Action

5. No

6. Need

7. Yes

8. Retail DG
   - Acquire through Solar Rewards or Solar Rewards Community

9. Acquire through Solar Rewards or Solar Rewards Community

10. Phase 1 ERP:
    - Firm Obligation Load
    - Resources
    - Capacity Need

11. Develop Alternative Plans that Meet Capacity Needs and Renewable Needs

12. Wholesale DG
    - Non DG

13. Phase 2 ERP:
    - Acquire Updated Capacity and Renewable Needs Through Phase 2 Competitive Acquisition Process

Source: PSCo's May 27, 2016 ERP, page 1-12
Colorado Public Utilities Commission Staff (Staff)
Colorado Office of Consumer Counsel (OCC)
Colorado Energy Office (CEO)
City of Boulder
Climax Molybdenum Company (Climax)
Colorado Energy Consumers Group (CEC)
Colorado Independent Energy Association (CIEA)
Colorado Solar Energy Industries Association (COSEIA)
International Brotherhood of Electrical Workers (IBEW), Local 111
Interwest Energy Alliance (Interwest)
Invenergy, LLC (Invenergy)
Joint Cooperative Movants (Holy Cross, Yampa Valley, Intermountain, and Grand Valley REAs)
Southwest Generation Operating Company (SWG)
Rocky Mountain Environmental Labor Coalition and Colorado Building and Construction Trades Council, AFL-CIO (jointly, RMELC/CBCTC)
Sustainable Power Group, LLC (sPower)
Vote Solar
Western Resource Advocates (WRA)

Colorado Department of Public Health and Environment (CDPHE) - amicus

Joined for the CEP
Aspen Skiing Company, Protect Our Winters, and Intrawest Resort Holdings (collectively, the Ski Resorts)
CDPHE (joined as party instead of amicus)
CF&I Steel, L.P. doing business as Evraz Rocky Mountain Steel (Evraz),
City and County of Denver
City of Lakewood
City of Pueblo
Coalition of Ratepayers
Environmental Defense Fund (EDF)
Pueblo Board of Water Works
Pueblo County
Pueblo’s Energy Future (PEF)
Sierra Club
Tri-State Generation and Transmission Association, Inc. (Tri-State)
Voluntarily retire Comanche 1 (end of 2022) and Comanche 2 (end of 2025).

Revised demand forecast need: include at least Comanche 1 replacement capacity

Public Service to own a target of:

- 50% of nameplate capacity of all eligible energy (i.e., renewable) resources
- 75% of nameplate capacity of all dispatchable and semi-dispatchable resources

If a Portfolio with reduced ownership saves >$50 million vs. CEP Portfolio, Company will also present a Materially Less Expensive Portfolio (MLEP) with reduced ownership requirements.

If the CEP Portfolio presents savings <$50 million, Company will also present a least-cost portfolio without ownership targets.

If a Stipulating Party advocates for disapproval, it may only advocate for (1) the MLEP or (2) one of the portfolios presented to fill either the 0 MW or the updated demand forecast case.

Separate proceeding for accelerated depreciation of Comanche 1&2

- reduce RESA collections from the present 2% to ~1%
- establish a regulatory asset for the accelerated depreciation
- use the dollars that otherwise would have been collected through the RESA to offset payments for that regulatory asset

Other provisions related to cost recovery, performance metric for owned-wind and CPCNs
A summary of bid counts by generation technology type and ownership structure can be seen in Table 22. For comparison, the Company received approximately 60 total bids in the 2013 All-Source Solicitation.

<table>
<thead>
<tr>
<th>Category</th>
<th>Build-Own Transfer</th>
<th>Company Self-Build</th>
<th>PPA</th>
<th>Split Ownership</th>
<th>Total</th>
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<tr>
<td>Battery Storage</td>
<td>4</td>
<td></td>
<td>24</td>
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<tr>
<td>Biomass</td>
<td>1</td>
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<tr>
<td>Combined Cycle</td>
<td>3</td>
<td>1</td>
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<td>4</td>
<td>4</td>
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<td>Combustion Turbine</td>
<td>5</td>
<td>10</td>
<td>8</td>
<td>4</td>
<td>27</td>
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<tr>
<td>Compressed Air Storage</td>
<td>1</td>
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<td>CT + Storage</td>
<td>2</td>
<td></td>
<td>5</td>
<td></td>
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<td>Internal Combustion</td>
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<td>1</td>
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<tr>
<td>Other</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
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<tr>
<td>Other Semi-Dispatchable</td>
<td>2</td>
<td></td>
<td>3</td>
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<td>5</td>
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<td>Solar PV</td>
<td>41</td>
<td>104</td>
<td></td>
<td>1</td>
<td>146</td>
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<tr>
<td>Solar PV + Storage</td>
<td>15</td>
<td>65</td>
<td>45</td>
<td>11</td>
<td>80</td>
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<tr>
<td>Wind</td>
<td>40</td>
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<td></td>
<td></td>
<td>96</td>
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<tr>
<td>Wind + Solar Hybrid</td>
<td>1</td>
<td></td>
<td>7</td>
<td></td>
<td>8</td>
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<tr>
<td>Wind + Storage</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td>11</td>
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<tr>
<td>Total</td>
<td>113</td>
<td>10</td>
<td>277</td>
<td>17</td>
<td>417</td>
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<tr>
<td>Generation Technology</td>
<td># of Bids</td>
<td>Bid MW</td>
<td># of Projects</td>
<td>Project MW</td>
<td>Median Bid Price or Equivalent</td>
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<tr>
<td>---------------------------------------------</td>
<td>-----------</td>
<td>--------</td>
<td>---------------</td>
<td>------------</td>
<td>--------------------------------</td>
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<tr>
<td>Combustion Turbine/IC Engines</td>
<td>29</td>
<td>6,365</td>
<td>19</td>
<td>4,436</td>
<td>$ 5.08</td>
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<td>Combustion Turbine with Battery Storage</td>
<td>7</td>
<td>804</td>
<td>3</td>
<td>476</td>
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<td>Gas-Fired Combined Cycles</td>
<td>3</td>
<td>873</td>
<td>3</td>
<td>873</td>
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<td>Stand-alone Battery Storage</td>
<td>28</td>
<td>2,144</td>
<td>24</td>
<td>1,945</td>
<td>$ 10.53</td>
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<tr>
<td>Compressed Air Energy Storage</td>
<td>1</td>
<td>317</td>
<td>1</td>
<td>317</td>
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<tr>
<td>Wind</td>
<td>96</td>
<td>41,915</td>
<td>42</td>
<td>16,949</td>
<td>$ 19.30</td>
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<tr>
<td>Wind and Solar</td>
<td>5</td>
<td>2,601</td>
<td>4</td>
<td>2,151</td>
<td>$ 19.96</td>
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<tr>
<td>Wind with Battery Storage</td>
<td>11</td>
<td>5,700</td>
<td>5</td>
<td>2,700</td>
<td>$ 20.63</td>
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<tr>
<td>Solar (PV)</td>
<td>148</td>
<td>28,382</td>
<td>78</td>
<td>14,085</td>
<td>$ 30.96</td>
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<td>Wind and Solar and Battery Storage</td>
<td>7</td>
<td>4,048</td>
<td>7</td>
<td>4,048</td>
<td>$ 30.41</td>
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<td>Solar (PV) with Battery Storage</td>
<td>79</td>
<td>14,980</td>
<td>57</td>
<td>10,098</td>
<td>$ 38.30</td>
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<tr>
<td>IC Engine with Solar</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td></td>
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<tr>
<td>Waste Heat</td>
<td>2</td>
<td>21</td>
<td>1</td>
<td>11</td>
<td></td>
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<tr>
<td>Biomass</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>418</strong></td>
<td><strong>108,163</strong></td>
<td><strong>246</strong></td>
<td><strong>58,101</strong></td>
<td></td>
</tr>
</tbody>
</table>
Preferred CEPP Generation Locations
Scenario Planning:

• Not predicting the future
• Anticipating possible futures, and implications
• “Resiliency testing” of proposed decision
• “How wrong can we be without disaster?”
Load Growth

HIGH (electrification of new end uses)

LOW (High EE/DSM and or price sensitivity)

Current Approach ($ impact governs rate of change)

Pursuit of De-carbonization

Push to zero carbon (societal & policy imperative)
Load Growth

Current Approach

Steady increase in mix of Renewables and Natural Gas

Pursuit of De-carbonization

STATUS QUO

Retire Coal, refocus Natural Gas & Accelerate Renewables

Push to zero carbon

Retirements, with bill impacts
Rate Design/Regulation Fundamentals
Annual Load Curve (PSCo planning area)
Designing a Utility System

PSCo Actual (thru 2016) and Forecasted Summer Native Load Peak Demand (MW)

Source: PSCo 2016 Electric Resource Plan updated modeling assumption, page 12
Designing a Utility System

Seasonal Load Curve; PSCo
July 31, 2007; Peak = ~ 6,300 MW
Peak = ~ 5,300 MW
Electric Utility Business, simplified
Revenue Requirement:
$150,000/yr.
  Industrial: $50,000 ($5,000/yr)
   (13 MW; 100,000 kWh/yr.)
  Commercial: $45,000 ($1,500/yr)
   (7 MW; 10,000 kWh/yr.)
  Residential: $55,000 ($917/yr)
   (600,000 kWh/yr.)

• 100 Customers:
  – 10 Industrial
  – 30 Commercial
  – 60 Residential

What If:
• Utility could select its customers?
• Customers begin to leave the system?
• Per capita usage declines?
Revenue Formula for "Cost-of-Service" Regulated Utilities

\[ RR = r(C) + D + OE + T, \text{ where} \]

\[ RR = \text{the annual "revenue requirement"} \]
\[ r = \text{the regulator-authorized rate of return} \]
\[ C = \text{"rate base," the total amount of undepreciated capital investment made by the utility} \]
\[ D = \text{depreciation, or the return of the utility’s capital investment} \]
\[ OE = \text{operating expenses, such as labor, fuel, etc.} \]
\[ T = \text{taxes, including all income taxes the utility will pay on its shareholders’ return} \]
Designing Electric Rates

- **Traditional (linear):**
  - Determine Costs
  - Identify Cost-causers (rate classes)
  - Objective: Establish Rates that Makes Utility “Whole”

- **Evolving (systemic):**
  - More complex objective: max system efficiency
  - Dynamic rates: time-of-use; peak pricing;

- **Horizon (iterative):**
  - Automation & Isolating the “Human Factor”
Understanding the IOU Business Model

• For-profit (investor-owned) utility’s first priority?
  – A reasonable return to shareholders

• Current financial incentives for the utility?
  – Investments in assets w/ set rate of return
  – Increases in sales yield increased returns to the utility (all else being equal)
Regulatory Interaction with the Utility Business Model

• Regulator (PUC) determines:
  – Revenue requirement ($ to cover expenses, plus)
  – Rate of return
  – Distribution of costs among rate classes
    (rate designs)

• Utility makes capital investments
  – Increased sales require increased investment
  – Return on investment yields shareholder benefits
Old Business Model – Under Assault

Need for transmission and Smart Grid investments

- Sell fewer and fewer kWh at higher and higher prices
- Yet required investments are trillions of dollars

Carbon limits and RPS

Rate case backlash

High construction and fuel costs

Population growth -- new hookups

Price elasticity lowers peak and sales

Slide Source: Brattle Group; Peter Fox-Penner; 07/01/10 presentation to CO PUC
2 Alternative Business Models

Slide Source: Brattle Group; Peter Fox-Penner; 07/01/10 presentation to CO PUC
## Regulatory/Business Models

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Incentives</th>
<th>Business Model/Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Service (COS) Distribution System Only</td>
<td>• Promotes capital spending on distribution system</td>
<td>• Illinois IOUs (no decoupling)</td>
</tr>
<tr>
<td></td>
<td>• No direct incentive to reduce sales or lower customer bills</td>
<td>• Massachusetts IOUs (decoupling)</td>
</tr>
<tr>
<td></td>
<td>• Decoupling works well to remove disincentive, but is not a strong EE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>positive incentive</td>
<td></td>
</tr>
<tr>
<td>Price Cap Regulation (PBR)</td>
<td>• Incentives are designed directly into PBR, e.g., target levels of</td>
<td>• Decide menu of network services and set price caps or other incentive</td>
</tr>
<tr>
<td></td>
<td>supply and quality metrics for each type of service</td>
<td>rates for them</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Energy delivery from upstream</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Backup/integration service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Storage</td>
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<td></td>
<td></td>
<td>• Information</td>
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<tr>
<td></td>
<td></td>
<td>• National Grid – U.S. and England</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Duke “Save-a-Watt”</td>
</tr>
</tbody>
</table>

Slide Source: Brattle Group; Peter Fox-Penner; 07/01/10 presentation to CO PUC
Looking Ahead...
The Electric Utility System: Complexity in Motion
• Encouraging more electrification

• “Stranded assets” and obligations to shareholders

• Distribution grid: enhance; devolve; disregard?

• Best regional market structure & generation asset dispatch

• Next phase of Net Energy Metering

• Incorporating societal impacts (externalities) in decision making
1. **Renewable Energy Standard (RES)**  
(Amendment 37 & successor statutes)

- **New Public Policy Objectives:**
  - New criteria directing utility resource planning
  - New Market Development (photovoltaics)
  - Self-generation

- **Regulatory Principle(s) at Issue:**
  - Performance dynamics of renewables, & operations
  - Cost causation & Cross-subsidization (PV)
  - Stranded assets?
2. Valuing Generation Resources

• New Public Policy Objective:
  – Internalizing Externalities
  – Placeholder value for future carbon policy

• Regulatory Principle(s) at Issue:
  – “Least-cost” portfolio selection
  – Risk mitigation
3. “Clean Air/Clean Jobs” (HB 10-1365)$^1$

• New Public Policy Objective(s):
  – Compliance with EPA Air Quality requirements (regional haze; nitrous oxide)
  – [Reducing carbon emissions]

• Regulatory Principle(s) at Issue:
  – Decision making jurisdiction (legislature v. PUC)
  – Risk management w/in generation portfolio

2019: GHG goals; “social cost of carbon”; etc.
4. Demand-Side Management (energy efficiency) (HB 07-1037; reauthorized in 2018)

- New Public Policy Objective(s):
  - Pursue end-use reductions as a planning resource

- Regulatory Principle(s) at Issue:
  - Return-on-Equity based business model
  - Undercutting utility sales
  - Financial incentives
Distribution System Operations: The Next Regulatory Frontier?

- Oversight of Capital Investments
- Evaluating Options (“Non-Wires Alternatives”)
- Regulator as “Traffic Cop”
Applying Our Shared Principles

- Fairness/Justice
- Protection/Safety
- Pursuit/Protection of the Common Good

Lots of Potential... If Applied Effectively

To Utility Regulation...
- Electric Resource Planning
- Renewable Energy Compliance Planning
- Demand-Side Management
- Grid Modernization
- Rate Design
So, in conclusion:
21st Century Utility Regulation

- Regulator – Utility Interactions
  - Who is leading/following whom?
- Complexity, Risk & Uncertainty
  - Scenario Planning (Rand; Shell;)
  - Multi-Disciplinary
  - A legal arena; yet, requires: economics; engineering; consumer behavior; integrated planning skills
“For every complex problem there is an answer that is clear, simple and wrong.”

H.L. Mencken