

From Lab to Regulation: How Should Science Inform Energy Policy?

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Primary Drivers of Policy

- Laws – passed by Senate and Assembly, signed by Governor
- Regulations – promulgated by administrative agencies
- Administrative action – agencies acting within the scope of legal (statutory) authority

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Statutory Examples

➤ **Regional Greenhouse Gas Initiative (“RGGI”)**

- Multi-state program to reduce greenhouse gas emissions
- Response to weight of scientific evidence that human activity is changing climate
- Science/technology underlie program, but cannot set the rules
 - Technical data informs policy decisions such as annual emissions caps, change in cap from year-to-year
 - Emissions- and technology-related data do not tell you what these implementation details should be
 - This “gap” between science and policy cannot be answered in the lab
 - Balancing of interests (cost, equity, technology, etc.) on case-by-case basis

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Statutory Examples

➤ **Energy Planning Law**

- Every four years (*sort of*), New York State Energy Planning Board develops comprehensive plan regarding all fuels, all end uses, all sectors
- Substantial volume of technical analyses, models and forecasts
- All energy-related agency decisions are supposed to be “reasonably consistent” with current Energy Plan or its most-recent update
- Data informs the policy objectives set forth in the Energy Plan
- **Key policy objectives of 2014 Draft State Energy Plan:** improving energy affordability; leveraging private investment; improving resiliency and flexibility of electric system; increased customer choice; aligning innovation with demand

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Statutory Examples

➤ Net Metering

- Energy from qualifying on-site renewable generation sold to local utility
 - If generation exceeds consumption, generate credits
 - If consumption exceeds generation, use credits
 - Example: solar PV on residential roof



➤ Lease/PPA model most common

- Developer (e.g., SolarCity) installs and owns system, receives tax incentives
- Customer pays monthly charge for solar power for period of years
- Energy credits generated/used as noted above

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Statutory Examples

➤ Remote Net Metering

- Similar concept to net metering, but generation located at “remote” site
- Typically, Main Campus energy measured on volumetric (kWh) basis
 - Convert kWh exceedances at Remote Site to monetary credits which may be allocated to other customer meter
 - Differs from net metering, which typically accumulates only kWh credits for on-site use
 - Many larger projects depend on this framework
- Public Service Commission (PSC) concerned with larger value of remote net metered projects, decided to eliminate monetary crediting
 - Cratered market for large projects
 - Subsequent PSC orders seek orderly transition from monetary crediting, but project status uncertain



Main Campus



Remote Site

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Primary Drivers of Policy

➤ Regulations

- Policy established by law, effectuated by regulation
- Regulations promulgated by administrative agency to implement laws
- Developed pursuant to public process including comment period
- Carry the force of law

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Primary Drivers of Policy

➤ Agency Precedent

- Agencies have broad discretion to regulate
- May issue orders, policy statements, guidance documents, etc. to develop policies and establish rules and procedures
- Jurisdictional entities must comply with agency orders

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Policy May Be Driven By Agency Action

- **New York State Public Service Commission (PSC)**
 - Regulates electric, gas, steam utilities in New York State
 - May effectuate gubernatorial policy initiatives ... or be the initial source of a new policy initiative
 - Currently drives substantial portion of State energy policy

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Policy May Be Driven By Agency Action

- **Utility rate cases present additional opportunities to advance policy**
 - PSC regulates terms and conditions of utility service in New York State
 - Rate requests present opportunity to modify terms and conditions

- **Hurricane Sandy** caused extensive damage to utility infrastructure
- Con Edison instituted \$1 billion storm hardening initiative to make its electric, gas, and steam systems more resilient to future climate events
- Rate cases following Hurricane Sandy included major focus on this Storm Hardening Program
 - Included consideration of climate models and debate over how those models should be reflected in system design and planning
 - Adapting systems to changing climate
- Resiliency subsequently reflected in Draft 2014 State Energy Plan

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Policy May Be Driven By Agency Action

- **RPS is comprised of three “tiers”**
 - **Main Tier** – utility-scale renewable energy systems
 - Wind farm, hydroelectric, etc.
 - Competitive solicitations issued by NYSERDA
 - 10-year contract provides \$/MWh to generator, NYSERDA takes title to all associated “RPS Attributes”
 - **Customer-Sited Tier** – “behind-the-meter” technologies that are smaller and generally not economically competitive with Main Tier technologies
 - Solar, fuel cell, anaerobic digester, small wind, etc.
 - Open enrollment programs administered by NYSERDA provide incentives to support system development
 - **Maintenance Tier** – supports RE facilities operating when RPS commenced, intended to maintain baseline level of renewable production
 - Very few participating facilities

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Policy May Be Driven By Agency Action

- **EEPS provides incentives to promote the increased deployment of energy efficiency measures**
 - **NYSERDA** administers portfolio of electric and gas efficiency programs on a statewide basis
 - Many successes, but also many challenges in achieving scale, as suggested in part by current surplus
 - **Utilities** administer portfolio of electric and gas efficiency programs within their respective service territories
 - Operate under a Revenue Decoupling Mechanism to reduce/eliminate disincentive to promote energy efficiency
 - Programs funded by customers via utility bill surcharge
 - Some exemptions apply
 - Cannot participate in program if you do not pay the surcharge
 - Currently, electric customers fund only electric programs, gas customers fund only gas efficiency programs

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Policy May Be Driven By Agency Action

- **SBC** denominated as the Technology & Market Development Program
 - Generally focuses on market transformation and the commercialization of new clean energy technologies
 - **Three program areas and nine initiatives**
 - **Power Supply and Delivery:** Smart Grid and Electric Vehicle Infrastructure; Advanced Clean Power; Combined Heat and Power
 - **Building Systems:** Advanced Buildings; Advanced Energy Codes and Standards
 - **Clean Energy Infrastructure:** Market Development; Clean Energy Business Development; Workforce Development; Environmental Monitoring, Evaluation and Protection

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Policy May Be Driven By Agency Action

- **In 2014, PSC and NYSERDA acknowledged that RPS and EEPS would not reach their respective 2015 goals**
 - In May 2014, PSC reported that, as of year-end 2013, RPS at 49% of 2015 goal, EEPS electric at 55% of 2015 goal, EEPS gas at 59% of 2015 goal
 - Programs faced criticism for cost, lack of transparency, and lack of spending
 - Data regarding program performance, targets and expenditures not readily accessible in easy to digest format
 - In 2015, approved collections for RPS, EEPS and SBC estimated to be approximately \$925 million
 - NYSERDA projected that it would be in possession of a combined RPS/EEPS/SBC surplus of approximately \$695 million at end of 2014-2015 fiscal year
 - Excludes \$165.6 million of surplus used to provide initial capitalization for the New York Green Bank, and incremental collections to support utility-administered efficiency programs

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Reforming the Energy Vision (“REV”)

- **In 2014, PSC instituted new proceeding with intent to effectuate sweeping changes in how we generate, distribute and use energy**
 - Utilities will be denominated Distribution Service Platform Providers (DSPPs) and directed to procure energy efficiency, renewable energy and distributed generation, demand reduction as part of core operations
 - Shift from customer-funded incentive programs to private financing
 - Emphasis on increasing customer choice and participation in energy markets, penetration of clean energy projects, efficient use of electric system
 - RPS, EEPS and SBC surcharges will be consolidated into a single “**Clean Energy Fund**” that will support certain REV-related activities
 - **NY-Sun Initiative** - \$105 million annually through 2023 to support solar PV
 - **Green Bank** - \$780 million to “complete” Green Bank capitalization
 - **R&D** – focused on commercializing technologies that yield GHG emissions reductions
 - **Efficiency/Renewables** – focus on reducing market barriers, include some incentives

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Reforming the Energy Vision (“REV”)

- **REV addresses six primary objectives**
 - Enhanced customer knowledge and tools that will support effective management of total energy bill
 - Market animation and leverage of customer contributions
 - System-wide efficiency
 - Fuel and resource diversity
 - System reliability and resiliency
 - Reduction of carbon emissions
- Major emphasis on increasing deployment of Distributed Energy Resources (DERs)
 - Expansive label that includes energy efficiency, demand response, distributed storage, distributed generation
 - Expansion of DER will be critical focus of PSC in implementing REV
- **Major changes in utility regulation pursuant to this initiative**

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Reforming the Energy Vision (“REV”)

➤ REV has been the primary focus of PSC

- Details remain sparse as initiative develops
- Limited technical or benefit/cost analysis
- Expectation that regulatory action will drive market and customers to the desired outcome (which still is being defined), stimulate innovation
- Several elements dependent on technological advances
 - Energy storage
 - Technology platform for real-time data
- Highly-technical issues supported by market potential studies and market theory with little discussion of technical underpinnings
- How might scientists and engineers add value to initiatives such as this?

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Questions?

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