

# Distribution Infrastructure and Electricity Transformation

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# These Aren't Your Grandfather's Distribution Rates

- Despite the fact (or perhaps because of the fact) that distribution service remains the most heavily regulated monopoly portion of the electric industry, distribution service and rates have become increasingly important tools in developing new policies with respect to competition, energy efficiency, demand response, and environmental protection.
- Examples include smart meters, dynamic pricing, decoupling, and straight/ fixed/ variable rate design.

# Smart Meters – The Pennsylvania Experience

- Pennsylvania opened its generation service to competition in 1996, though, with stranded cost recovery and generation rate caps extending for some utilities through 2010, there has been only limited retail generation competition to date.
- In 2008, the Pennsylvania General Assembly passed legislation (Act 129) that addressed procurement for generation default service, energy efficiency and demand response programs, and smart meter deployment.

# Act 129 – Smart Meters

- Under Act 129, each Pennsylvania electric distribution company (EDC) must file a plan to replace all of its meters over the next 15 years (or sooner upon an individual customer's request and on all new construction).
- The new meters must be capable of allowing utilities to measure customer usage on an hourly basis and to communicate energy price information to consumers in real time.
- Utilities must offer optional time of use and real time rates to all customers on a voluntary basis.
- Utilities are permitted to recover the costs of the smart meter programs either through base rates or through a single issue reconcilable surcharge.

# Pennsylvania EDC Smart Meter Plans

- Each Pennsylvania EDC has filed a smart meter plan with the Pennsylvania PUC. Depending in part on the EDC's current metering technology, each EDC proposed a somewhat different implementation plan and schedule.
- Needless to say, each EDC has requested recovery of all its costs (including return of and return on capital) through a single issue smart meter surcharge.

# Allegheny Power Smart Meter Plan

- Allegheny Power has proposed to install smart meters for all of its 725,248 customers by the end of 2014. Allegheny will also install in-home display devices at the homes of all of its residential customers.
- In addition to the meters and in-home display devices, Allegheny's proposal includes major improvements in its customer information system and network and information technology systems.
- Allegheny seeks to recover the \$580 million of costs for this program through a monthly customer surcharge to all of its Pennsylvania distribution customers.

# Allegheny Power Smart Meter Plan

- Under Allegheny's initial proposal, each residential customer would pay a monthly surcharge – regardless of usage -- that would increase to \$15.77 per month by 2013.
- In 2009, Allegheny residential customers were paying a monthly customer charge of \$5.00 and the total monthly bill for a 500 kwh residential customer was approximately \$46.45. A \$15.77 per month smart meter surcharge would increase the monthly customer charge by 315% and the overall monthly bill for a 500 kwh customer by 34%.
- Moreover, because of the method in which Allegheny proposed to allocate costs, the monthly surcharge for individual residential customers would be as high as or higher than the surcharge for large commercial and industrial customers.

## Allegheny Power Smart Meter Technology Proposed Surcharge

Tariff Classification	Surcharge \$ / month			
	Feb 2010 thru May 2011	June 2011 thru May 2012	June 2012 thru May 2013	June 2013 thru May 2014
Tariff No. 39, Schedule 10 - Residential	\$5.86	\$14.34	\$15.57	\$15.77
Tariff No. 39, Schedule 20 – Small Commercial	\$5.94	\$13.90	\$14.57	\$14.20
Tariff No. 39, Schedule 30 – Medium Commercial & Industrial	\$5.94	\$13.90	\$14.57	\$14.20
Tariff No. 39, Schedule 40 – Large Industrial	\$5.94	\$13.90	\$14.57	\$14.20
Tariff No. 39, Schedule 44 – Large Steel Manufacturer	\$5.94	\$13.90	\$14.57	\$14.20
Tariff No. 37 – Penn State University	\$5.94	\$13.90	\$14.57	\$14.20



# Cost Allocation and Rate Design

- All Pennsylvania EDC's have proposed to allocate the costs of the smart meters through direct assignment by customer class and all common costs, such as information and communications systems, on a customer basis.
- When costs are allocated on a customer basis, it means that a 500 kwh per month residential customer is allocated the same exact cost as a 5,000,000 kwh per month industrial customer.
- As a result, each Pennsylvania EDC allocated the vast majority (85-90%) of its smart meter plan costs to its residential customers.

# Cost Allocation and Rate Design

- The OCA has argued that, while meter costs have traditionally been allocated on a per customer basis, these are not traditional meters.
- It is clear that utilities would not spend hundreds of millions of dollars to rip out perfectly usable standard meters and replace them with two-way communicating, real-time energy reading, smart meters, simply to count each customer's kilowatt hours for monthly billing purposes.
- To the extent that universal deployment of this technology is justified at all, it must be because of its ability to reduce energy and demand costs on a system-wide basis. The OCA has therefore argued (so far unsuccessfully) that the common costs of the smart meter network should be allocated on an energy and demand basis, rather than on a customer basis.

# What About Intra-Class Discrimination?

- Even within a customer class, some customers clearly will benefit more from smart meter technology than others.
- Under PA Act 129, utilities have proposed to spread most smart meter costs equally to all customers within each class via a monthly surcharge. OCA proposed that residential surcharge be wholly or partially volumetric.
- Act 129 creates an exception for customers who request smart meters before their scheduled deployment. Those customers must pay the upfront cost of the new meter installation.
- Proposed costs for these early installations in PA range from \$16 (PECO) to \$1305 (Duquesne).

# Costs of Additional Smart Meter and Smart Grid Investments

- Additional costs may be incurred on the customer side of the smart meter for in-home display devices, programmable thermostats, special equipment for plug-in hybrid electric vehicles, etc.
- Except for the Allegheny Power proposal to install in-home display devices in every home (and certain pilot programs proposed by other utilities) the cost of devices on the customer side of the meter are generally proposed to be borne by the individual customer. Many of these devices, of course, do not have to be obtained from the utility, but can be purchased elsewhere.
- Where smart grid improvements are made on the distribution network, it is likely that those costs will be allocated to all customers, even though some customers will benefit more than others.

# Rate Design Goals

- Under traditional ratemaking, cost allocation and rate design function primarily as a means of achieving a fair and equitable method for a utility to recover all of its embedded (historic) costs of providing service to each customer class.
- In a partially regulated, partially deregulated world, greater emphasis is placed on economic efficiency and providing better “price signals” to customers based largely on marginal cost principles.

# Fixed Costs vs Variable Costs

- There is a renewed debate over the use of “straight fixed variable” types of rate designs, where the “fixed” costs of service are recovered through the monthly customer charge, while only those costs that vary with usage are charged on a kilowatt hour basis.
- Some utilities argue that it is appropriate to recover such costs through a monthly fixed charge because those costs are incurred on behalf of each customer regardless of usage.
- Many consumers and advocates for conservation and energy efficiency argue that this wipes out the benefits to the customer and the incentive to use energy wisely.

# Decoupling

- A parallel debate can be found in the discussion of whether utility revenues and profits should be “decoupled” from utility sales. The argument is that utilities should not be penalized between base rate cases because of customer conservation, especially when such conservation results from utility-sponsored energy efficiency programs.
- In Pennsylvania, decoupling has been most strongly advocated by natural gas utilities whose per customer sales have been steadily decreasing for many years.

# Distribution System Improvement Charges (DSIC's)

- Utilities in Pennsylvania have also proposed Distribution System Improvement Charges (DSIC's) and other single issue surcharges as a way of reflecting new distribution investments in rates, without having to file a base rate case.
- These types of surcharges are opposed by consumers because they only reflect specific line-item cost increases, without reflecting countervailing cost reductions or revenue increases. In a full base rate case, for example, new distribution plant additions are offset by depreciation and retirements of existing plant. Increased capital expenditures may also be offset by lower costs of debt and other capital.



# Impacts on Allowed Return on Equity

- Rate proposals such as high customer charges, straight fixed variable rate design, revenue decoupling, distribution system surcharges, et al, are all designed to reduce revenue erosion risks for the distribution utility between base rate cases.
- To the extent that any or all such proposals are approved by commissions, consumers may argue that they should be accompanied by lower equity returns to reflect reduced risk.

# Act 129 of 2008

- Act 129 for the first time imposed mandatory energy efficiency and peak demand reduction goals on Pennsylvania electric distribution companies.
- Act 129 did not provide for, and arguably prohibited, revenue decoupling for electric utilities.

# Act 129 of 2008 - Energy Efficiency and Demand Response

- Each electric distribution company (EDC) must file with the PUC an energy efficiency and conservation plan.
- Under the plan, the EDC must implement programs that will reduce its customers total annual electricity consumption by at least 1% by May 31, 2011; and by 3% by May 31, 2013.
- The EDC must also implement programs to reduce peak demand during the 100 hours of highest use by at least 4.5% by May 31, 2013.

# Act 129 of 2008: What About Decoupling and Lost Revenues?

- Act 129 allows a utility to spend an amount up to 2% of its annual revenues to implement the plans, and allows the utility to recover all reasonable and prudent costs from its customers through an automatic adjustment clause.
- Costs recovered through an automatic adjustment clause, however, may not include “decreased revenues of an electric distribution company due to reduced energy consumption or changes in energy demand.”

# Act 129 of 2008: What About Decoupling and Lost Revenues?

- Act 129 states that “decreased revenues” resulting from conservation measures can only be recovered through normal base rate proceedings.
- This provision effectively precludes a “decoupling” mechanism between base rate cases.

# Carrots or Sticks?

## Incentives or Penalties?

- Act 129 provides no special “incentives” or “rewards” for meeting the requirements of the law.
- Instead, Act 129 imposes penalties on utilities, in the form of a \$1 million to \$20 million fine, for failure to meet any of the usage and peak demand reduction standards.

# Decoupling Revisited?

## New Federal Stimulus Act

- The American Recovery and Reinvestment Act of 2009, signed into law by President Obama on February 17, 2009, includes substantial grants to states to promote energy efficiency.
- A portion of those grants are contingent on a state certification that the applicable state regulatory authority will seek to implement a general policy “that ensures that utility financial incentives are aligned with helping their customers use energy more efficiently.” Pub. L. No. 111-5, Section 410(a), 123 Stat. 115 (2009).
- The PA PUC has opened a proceeding to seek comments on how that provision can be implemented.

# Decoupling Revisited?

## New Federal Stimulus Act

- Does the federal stimulus act require some type of decoupling in order to qualify for additional federal energy efficiency funding?
- Do the penalty provisions of Act 129 “ensure that utility financial incentives are aligned with helping their customers use energy more efficiently”?



# Penalties vs. Rewards

“Nothing concentrates one’s mind so much as the realization that one is going to be hanged in the morning.”

Samuel Johnson

# Waxman/Markey -- American Clean Energy and Security Act of 2009

- Under the proposed Waxman/Markey climate change legislation, free carbon dioxide emission allowances would be initially allocated to regulated electric distribution companies under the proviso that the benefits of the free allowances must be used “exclusively for the benefit of retail ratepayers.”
- In distributing those benefits to retail ratepayers, however, the utilities may not provide rebates that are “based solely on the quantity of electricity delivered to such ratepayer.”

# Waxman/Markey -- American Clean Energy and Security Act of 2009 (2)

- Any rate rebates provided by utilities under this provision must be applied “to the maximum extent practicable ... to the fixed portion of ratepayers’ bills or as a fixed credit or rebate on electricity bills.”
- In other words, Waxman/Markey wants customers to see the full impact of carbon costs on the variable portion of their bill, while benefits of free allowances are used to reduce or eliminate the fixed portion of the bill. This will maximize customers’ incentive to conserve.

# Incentives to Whom?

- Is it more important to give conservation incentives to utilities or to customers?
- SFV rate design assures recovery of fixed costs for utilities, and removes the utility's disincentive to promote customer conservation, but it also reduces the conservation benefit to the customers.

# One More Point: Does Decoupling Work In A Restructured State Like PA?

- The most profitable portion of our unbundled electric utility corporations are their unregulated generation affiliates, who make more money by selling more generation at higher market clearing prices.
- At PPL's most recent earnings conference on February 5, 2010, the Company was quoted as stating that 77% of its 2010 earnings are expected to come from its supply segment.
- Even if a utility's distribution company is rendered indifferent to sales losses due to decoupling, doesn't the utility corporation's overriding incentive still lie in increased unregulated generation sales?

# And Finally: How Much Do Real People Know and Care about Rate Design?

- Residential customers in Pennsylvania are very aware of the overall rate and bill increases that they have experienced or are about to experience as generation rate caps expire.
- Faced with these rate increases, many customers understand that they can reduce their bills by reducing their usage through energy efficiency and conservation measures.
- It is not yet clear how many residential customers will be able or willing to take advantage of (or avoid harm from) some of the more sophisticated rate design and pricing programs that are now being proposed.