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Energy Efficiency

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Interaction between energy efficiency and renewable energy development

- Renewable energy standard (RES) development addresses the supply side of the energy market
 - Under RES standards, renewable energy is used to meet some of the generation needs of the customer base



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Interaction between energy efficiency and renewable energy development, continued

- Energy efficiency measures address the demand side of the energy market
 - Demand side programs are used to help customers reduce the amount of energy they consume



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Interaction between renewable energy standards and energy efficiency, continued

- Both renewable energy standards and energy efficiency measures can have the effect of reducing dependence on the use of nonrenewable fuel sources
- Both renewable energy standards (as they affect the utility's supply side plans) and energy efficiency measures are accounted for in utilities' integrated resource planning process



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Renewable energy standards in Missouri

- In 2008, Missouri voters passed a proposition adopting statewide renewable energy standards for investor-owned utilities
 - Investor-owned utilities must meet certain renewable energy portfolio goals by the dates specified in the statute (Section 393.1030, Revised Statutes of Missouri)



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Missouri renewable portfolio requirements

- Investor-owned utilities must meet the following targets:
 - No less than 2% for the years 2011-2013
 - No less than 5% for the years 2014-2017
 - No less than 10% for the years 2018-2020
 - No less than 15% for the years beginning in 2021



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Missouri renewable portfolio requirements, continued

- At least 2% of each portfolio requirement must be derived from solar energy
- Utilities may meet portfolio requirements by purchasing renewable energy certificates (RECs)
 - Renewable energy credits may be used to fulfill the utility's portfolio requirement in whole or in part
 - Renewable energy credits are often called green certificates in Europe



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Section 393.1030 requirements

- Each kilowatt hour (kWh) of eligible electricity generated in Missouri counts as 1.25 kWh for compliance purposes
- Unused credits may exist for up to three years
- Credits may only be used once and may not be used to satisfy any other non-federal requirement
- RECs from net-metered sources are initially owned by the customer-generator
- Credits may not be derived from green pricing programs



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Other Section 393.1030 requirements

- The Missouri PSC was directed to adopt renewable energy standard rules with certain features:
 - A maximum average retail rate increase of no more than 1% over the cost of using nonrenewable rules (the PSC's rules call for the use of a 10-year average)
 - Penalties of at least twice the average market value of RECs for failing to meet the portfolio standards in the statute
 - Annual reporting provisions



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Other Section 393.1030 requirements, continued

- Recovery of prudently-incurred costs and pass-through of customer benefits outside of the normal ratemaking process
- Standard solar rebate of \$2 per dollar installed watt for solar power systems (25 kWh maximum)
- REC certification criteria
- Acceptable renewable energy sources include methane generation from farm waste and the use of gas produced from landfill waste material
 - The rules adopted by the PSC in compliance with the statute are currently on appeal



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Section 393.1030

- Missouri law does not currently allow the use of energy efficiency measures to fulfill renewable portfolio requirements
- Missouri has a separate statute and separate rules addressing the adoption of demand side energy efficiency measures



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Energy Efficiency standards in Missouri

- The Missouri legislature adopted the Missouri Energy Efficiency and Investment Act (MEEIA) in 2009 (Section 393.1075, Revised Statutes of Missouri)
- The Act states that it is the policy of Missouri to value investments in demand-side energy efficiency measures equally to investments in supply-side infrastructure investments



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Section 393.1075

- Utilities have a disincentive to engage in energy efficiency measures because such measures are designed to reduce the demand for the product sold by the utilities
- A reduction in demand can result in the loss of revenue
 - Section 393.1075 directs the PSC to adopt rules that are meant to help lessen the potential impact of energy efficiency measures on the financial health of the utility



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Section 393.1075 requirements

- Provide timely cost recovery for utilities
- Ensure that utility financial incentives are aligned with helping customers use energy more efficiently and in a manner that sustains or enhances utility customers' incentives to use energy more efficiently
- Provide timely earnings opportunities associated with cost-effective measurable and verifiable efficiency savings



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Missouri non-mandatory energy efficiency goals

- The PSC has established non-mandatory goals for achieving all cost effective demand side savings:
 - 2012: 0.3% of total annual energy and 1% of annual peak demand
 - 2013: 0.5% of total annual energy and 1% of annual peak demand
 - 2014: 0.7% of total annual energy and 1% of annual peak demand
 - 2015: 0.9% of total annual energy and 1% of annual peak demand



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Missouri non-mandatory energy efficiency goals

- 2016: 1.1% of total annual energy and 1% of annual peak demand
- 2017: 1.3% of total annual energy and 1% of annual peak demand
- 2018: 1.5% of total annual energy and 1% of annual peak demand
- 2019: 1.7% of total annual energy and 1% of annual peak demand
- 2020 and beyond: 1.9% of total annual energy and 1% of annual peak demand



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Missouri energy efficiency rules

- To comply with the mandates of Section 393.1075, the PSC allows three cost recovery mechanisms for utilities with approved demand side management programs:
 - Utility cost recovery revenue requirement
 - Utility incentive revenue requirement
 - Utility lost revenue requirement
 - Indirect costs associated with these cost recovery components are eligible for recovery



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Utility cost recovery revenue requirement

- The revenue requirement approved by the PSC in a utility's filing in a Demand Side Investment Mechanism (DSIM) rate adjustment case to provide the utility with cost-recovery of demand side program costs based on the approved cost component of a demand side investment mechanism
 - Based on the contemporaneous accounting records of the utility
 - Recoverable semi-annually



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Utility incentive revenue requirement

- The revenue requirement approved by the PSC to provide the utility with a portion of the annual net shared benefits based on the approved utility incentive component of a demand side investment mechanism
 - Based on the evaluation, measurement, and verification
 - Recoverable retrospectively



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Utility lost revenue requirement

- The revenue requirement explicitly approved (if any) by the PSC to provide the utility with recovery of lost revenue based on the approved utility lost revenue component of a demand-side investment mechanism
 - Lost revenue recovery is only permitted when the utility does not recover its fixed costs as set in the utility's last rate case:
 - “actual annual billed system kWh is less than the system kWh used to calculate rates to recover revenues as ordered by the commission in the utility's last general rate case”



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Utility lost revenue requirement, continued

- Utility lost revenue requirement is treated differently than utility cost recovery revenue requirement and utility incentive revenue requirement
 - Lost revenue requirement is based on evaluation, measurement and verification (EM&V) done by an independent contractor
 - Recovery is not available semi-annually
 - Recovery is allowed only retrospectively after the independent evaluator's report is complete



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Lost revenue recovery

- Lost revenue recovery is controversial
 - Many states do not allow it
 - Utilities want recovery to be allow prospectively based on projections provided by the utility
 - Consumer advocates oppose lost revenue recovery
 - If lost revenue recovery is allowed, consumer advocates recommend that recovery be retrospective only and that independent verification be required



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Total Resource Cost Test

- The test of the effectiveness of demand-side programs that compares the avoided utility costs to the sum of all incremental costs of end use measures that are implemented due to the program (including both utility and participant contributions), plus utility costs to administer, deliver, and evaluate each demand-side program



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Demand Side Investment Mechanism approval

- In Missouri, approval of a demand side investment mechanism does not require full rate case proceedings
- The utility submits an application for approval of a demand side investment mechanism to the PSC
- Applications must be approved or rejected by the PSC within 120 days; there must be an opportunity for a hearing



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Demand Side Investment Mechanism approval, continued

- The PSC shall approve the establishment, continuation, or modification of a DSIM and associated tariff sheets if it finds that the utility's approved demand-side programs are:
 - Expected to result in energy and demand savings
 - Beneficial to all customers in the customer class, regardless of whether the programs are utilized by all customers in the class
 - Will assist the PSC's efforts to implement the state's energy efficiency policies



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Demand Side Investment Mechanism approval, continued

- Factors the PSC may consider include but are not limited to:
- The magnitude of the impact on the utility's costs, revenues, and earnings
- The utility's ability to manage the program
- The ability to measure and verify the program's impacts
- Interaction among the various components of the proposed program



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Demand Side Investment Mechanism approval, continued

- The incentives or disincentives to the utility as a result of the inclusion or exclusion of component, utility lost revenue component and/or utility incentive component of a demand side investment mechanism
- “Disincentive” means any barrier to implementation
 - The rules do not authorize penalties



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Demand Side Investment Mechanism approval, continued

- To be approved, a proposed demand side investment mechanism with a total resource cost test with a ratio greater than 1 must meet the following criteria:
 - Be consistent with the goal of achieving all cost-effective demand side savings
 - Have reliable evaluation, measurement and verification plans
 - Are included in the utility's preferred resource plan or have been verified through an integration process showing the impact of the program on the net present value of the utility's revenue requirement



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Demand Side Investment Mechanism approval, continued

- The PSC shall approve demand-side programs having a total resource cost test ratio of less than 1 for demand-side programs targeted to low-income customers or general education campaigns if the PSC determines that the program is in the interest of the public and all other filing and submission requirements have been met



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Demand Side Investment Mechanism approval, continued

- If a proposed demand side investment mechanism is targeted to low-income customers, the utility must state how it will assess the expected and actual effect of the program on the utility's bad debts, customer arrearages, and disconnections



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Demand side investment mechanism approval, continued

- The PSC shall approve demand-side programs with a total cost ratio of less than 1 if filing requirements have been satisfied and the costs of the programs above the level that is determined to be cost-effective are funded by customers participating in the programs or through tax or other governmental credits or incentives designed for that purpose



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Opt-out provisions

- Customers are allowed to opt out of participation if one of the following criteria are met:
 - One or more accounts within the utility's service territory that has a demand of the individual accounts of 5,000 kWh or more in the previous 12 months
 - The customer operates an interstate pipeline pumping station
 - Accounts that have in aggregate a coincident demand of 2,500 kWh or more in the previous 12 months and the customer has its own demand side program that will result in savings at least as great as those expected from participation in the utility's program



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Tax credits and monetary incentives

- A customer that has received a state tax credit is not eligible for participation in demand-side programs that offer a monetary incentive to participate
- A customer participating in a program that offers a monetary incentive shall attest that no tax credits have been received
- The utility must maintain database of participants in programs with monetary incentives
- The customer names must be available to the PSC upon request



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Collaboratives

- Utility-specific collaboratives: each utility shall form a collaborative with its stakeholders to provide input on the design, implementation, and review of demand side programs
 - The PSC recommends that meetings take place no less often than quarterly



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Collaboratives, continued

- Statewide collaboratives: Electric utilities and their stakeholders shall form a statewide advisory collaborative to
 - Address the creation of a technical resources manual that includes values for deemed savings
 - Provide for the sharing of ideas and lessons learned from demand side planning and implementation
 - Create a forum for discussion statewide policy issues
 - A yearly meeting is encouraged



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Semi-annual adjustments

- The utility must submit proposed tariffs to adjust demand side investment mechanisms between general rate cases
 - The PSC Staff must file a recommendation within 30 days of the tariff filing
 - The PSC must determine whether to accept or reject the tariffs within 60 days of the tariff filing



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Implementation of a demand side investment mechanism

- Once a demand side investment mechanism is approved, the utility may request deferral accounting using its latest approved weighted average cost of capital until its next rate case
- An approved program shall not remain in effect more than four years
- A utility must file a general rate case within four years of having a demand side program approved
- Any amount charged to customers shall be shown by a separate line item



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Implementation of demand side investment mechanisms, continued

- Evaluation, measurement, and verification of demand side programs must be performed by an independent contractor who is hired and paid for out of the PSC's annual assessment to utilities
- The utility must file an annual report
- The utility must submit surveillance monitoring reports
- Prudence reviews must be conducted no less frequently than 24-month intervals



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Discontinuing a demand side investment mechanism

- Demand side investment mechanisms can be discontinued only after there is an opportunity for a hearing at the PSC
 - The utility must meet all the filing requirements as established by rule
 - Discontinuation can be opposed by any party to the utility's filing of the original program
 - The Commission may consider any change to the utility's business risk in setting the utility's allowed return on equity in rates



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Renewable energy standards and energy efficiency in other states

- Although Missouri law does not allow the use of energy efficiency measures to fulfill renewable portfolio requirements, several other states do allow this practice (according to a 2008 survey by the Lawrence Berkeley National Laboratory):
 - Hawaii
 - Up to 50% of the renewable portfolio standard can be met with energy efficiency
 - Heat pump water heating, ice storage, rate-payer funded efficiency programs, and use of rejected heat from cogeneration and combined heat and power systems



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Renewable energy standards and energy efficiency in other states

- Nevada
 - Up to 25% of renewable portfolio standard can be met with energy efficiency
 - Utility-subsidized efficiency measures installed after 1/1/05, and district powered by geothermal hot water; at least 50% of savings must come from third parties; energy efficiency receives standard multiplier of 1.05, and 2.0 for peak savings



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Renewable energy standards and energy efficiency in other states

– North Carolina

- 25% of renewable portfolio standards can be met with energy efficiency (Investor-owned utilities); will increase to 40% after 2021
- Up to 100% of main renewable portfolio standard can be met using energy efficiency for publicly-owned utilities
 - Efficiency measures after 1/1/07, including waste heat from combined heat and power systems powered by non-renewable fuels; publicly-owned utilities may also rely on demand-management/load-shifting



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Renewable energy standards and energy efficiency in other states, continued

- Some states have mandated or authorized establishment of energy efficiency portfolio standards that are separate from and in addition to renewable portfolio standards:
 - Colorado
 - Connecticut
 - Illinois
 - Minnesota



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Renewable energy standards and energy efficiency in other states, continued

- New Jersey
- New Mexico
- Pennsylvania
- Texas



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Renewable energy standards and energy efficiency in other states, continued

- Some states allow certain supply-side efficiency technology to fulfill a part of the state's renewable portfolio standards
 - Technologies include: Electricity and/or heat from combined heat and power and/or waste heat recovery facilities
 - Colorado
 - Connecticut
 - Hawaii
 - Illinois
 - Maine
 - Nevada
 - North Carolina



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External Sources

- Renewable Portfolio Standards in the United States: A Status Report with Data Through 2007; Ryan Wiser and Galen Barbose (April 2008) (Lawrence Berkeley National Laboratory)