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Designing Tariffs for Distributed Generation Customers

Mid-Atlantic Distributed Resources Initiative (MADRI)

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The Regulatory Assistance Project (RAP)®

Origins of This Paper

- Produced by RAP at the request of the MADRI steering committee
  - Assistance from Sally Buttner
  - Funding from US DOE
  - Draft reviewed by staff steering committee
- Not a MADRI consensus work product
  - Views shouldn't be attributed to US DOE, MADRI commissioners, staff, or stakeholders

PURPOSE

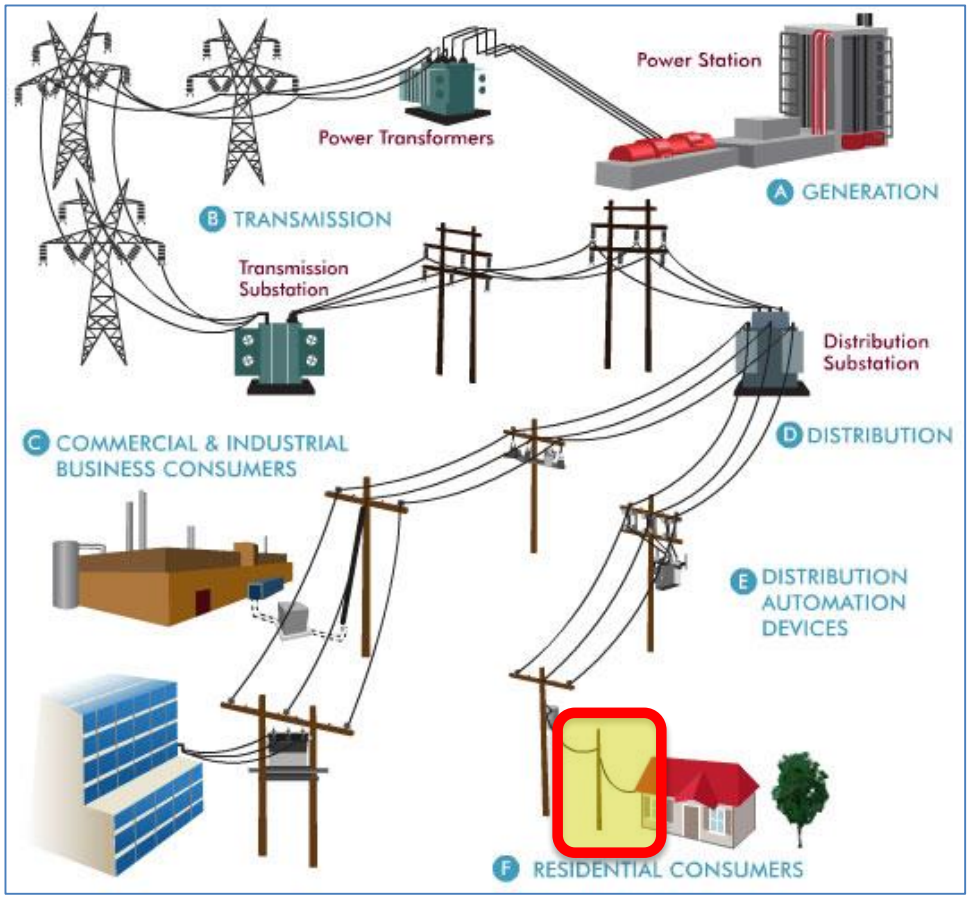
- Addresses retail rate design issues for customers w/ distributed generation (DG)
  - Primarily focused on residential PV
- Considers rate design comprehensively: distribution service and energy service
- Suggests guiding principles for rate design
- Describes the relative advantages and disadvantages of various options

Goals for DG Rate Design

- Assure the financial integrity of the utility
- Fairly compensate DG customers for the net value of their contribution to the grid
- Ensure that rates and bills remain fair and affordable for non-DG customers and provide proper price signals to minimize long-term costs

Principle #1 for Rate Design:

A customer should be allowed to connect to the grid for no more than the cost of connecting to the grid.



Principle #2

Customers should pay for the grid in proportion to how much they use the grid, and when they use the grid.

Principle #2 (cont'd)

Customers should pay for the grid in proportion to how much they use the grid, and when they use the grid.

Principle #3

Customers delivering power to the grid should receive full and fair value –- no more and no less.

DG Rate Design Options

Tariff Design	Basic Features	Issue Addressed		
		Compensation to DG Owner	Equitable Allocation of Grid Costs	Reduce Peak Demand
Net Metering	Balance generation and use, retail rate credit for generation	X		
High Customer Charges	Decrease volumetric, increase fixed charges			
Minimum Bills	Customer pays at least a minimum amount that is credited towards whole bill		X	
Time of Use Rates	Cost and payment for energy used and produced reflects values at various times of day, week, season	X	X	X

DG Rate Design Options (continued)

Tariff Design	Basic Features	Issue Addressed		
		Compensation to DG Owner	Equitable Allocation of Grid Costs	Reduce Peak Demand
Monthly Demand Charges	Demand charge based on highest use (kW) in month		X	X
Demand Charges for Infrastructure Upgrades	Demand charge to recover utility infrastructure upgrades		X	
Subscription Demand Charges	Customer pays a fee to be connected to the grid, and the fee increases with power rating of customer's connection		X	
Fees Imposed on DG Customers for Using the Grid	Flat fee charged to DG customer to compensate utility for lost revenue due to lower sales			

DG Rate Design Options (concluded)

Tariff Design	Basic Features	Issue Addressed		
		Compensation to DG Owner	Equitable Allocation of Grid Costs	Reduce Peak Demand
Bi-Directional Distribution Rates	Customer pays a volumetric rate for distribution services whether importing or exporting power	X	X	X (when combined with TOU)
Feed-In Tariffs (FIT)	Utility pays DG customer for energy produced at fixed rate under long-term contract	X		
Value of Solar Tariffs (VOS)	Customer pays full retail price on energy used and is compensated at commission approved rate for all energy produced; rate for payment designed to reflect all benefits of solar (e.g., includes societal benefits)	X	X	

Other Regulatory Options

- Revenue decoupling
- Cost-of-service studies
- Distribution credits
- Performance-based regulation

Limitations

- MADRI regulators do not design or regulate the design of rates offered by competitive retail energy suppliers!
- Paper doesn't offer specific options or analysis for design of distribution rates

Designing Tariffs for Distributed Generation Customers

- http://www.raponline.org/document/download/id/7983

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power sector. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

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