MGA Webinar #4

GREAT PLAINS INSTITUTE

Better Energy.
Better World.

AGENDA

- 11:00 to 11:10am: Welcome and Introductions
- 11:10 to 11:30am: Jim Lazar, RAP
- 11:30 to 11:50am: David Springe, NASUCA
- 11:50am to 12:00pm: Q & A and Discussion
- 12:00pm: Adjourn

RAP Energy solutions for a changing world

A New Era For Electricity Rates: Where the Rubber Meets the Road

Midwest Governors' Association

June 28, 2016

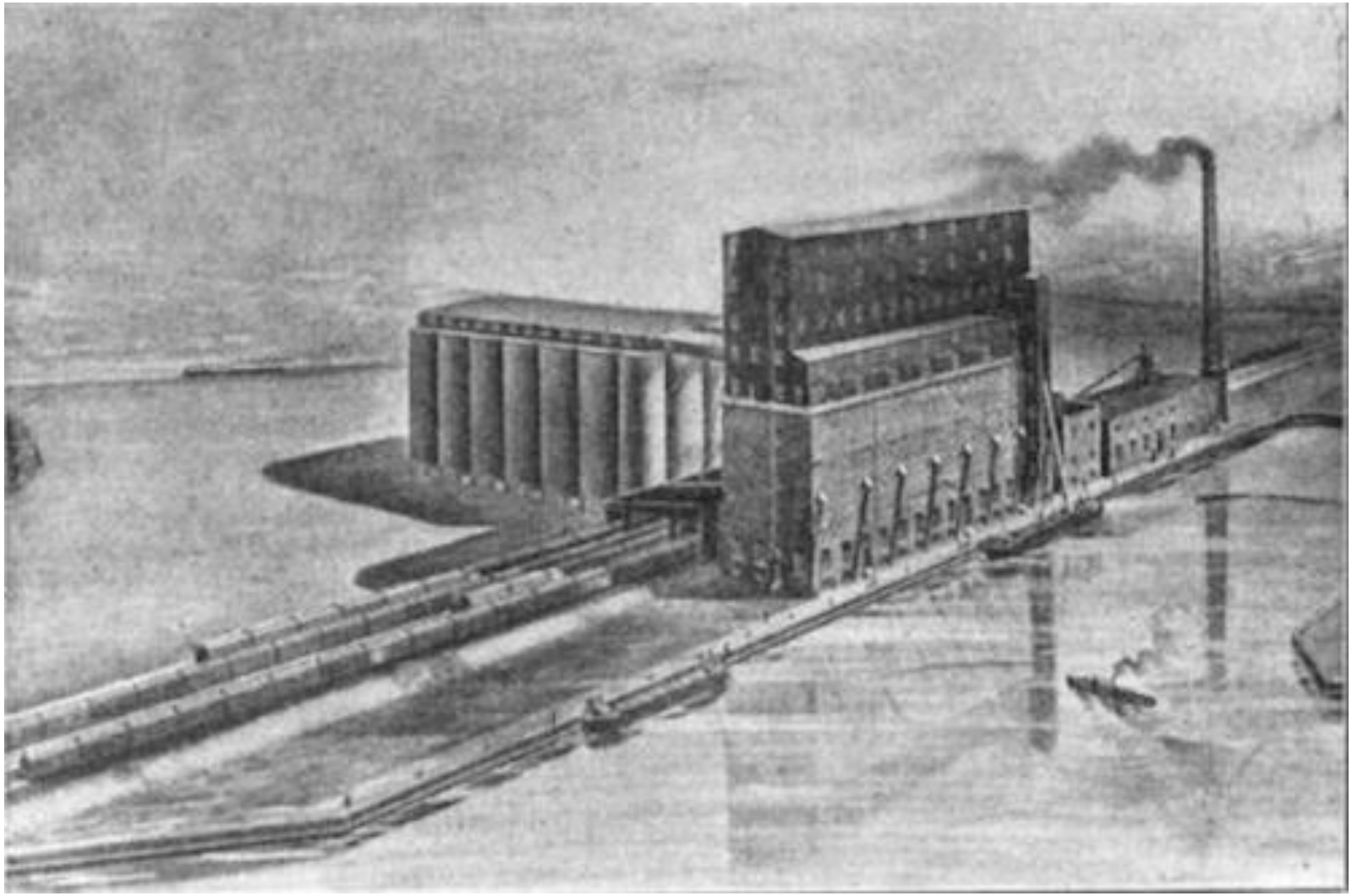
Jim Lazar, Senior Advisor

The Regulatory Assistance Project

50 State Street, Suite 3
Montpelier, VT 05602

Phone: 802-223-8199
www.raponline.org

Genesis of Utility Regulation



How Do Other Industries Recover Fixed Costs?

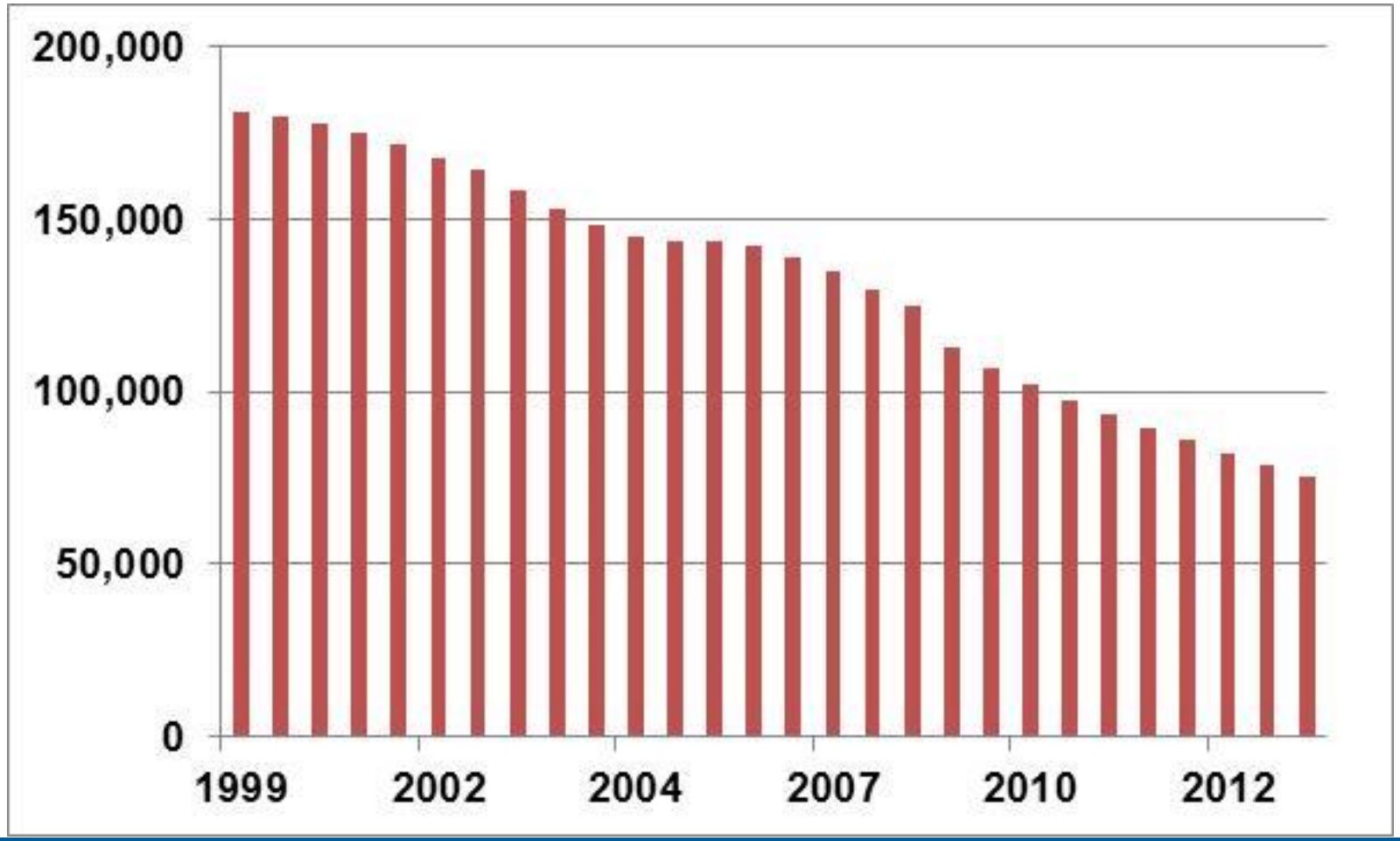
We Pay For Other "Grids" In Volumetric Prices

And They Are Happy To Have Your Business

The Biggest Grid of All: 18.44/Gallon

We're Been Here Once Before!

The Phone Companies Lost Half of Their Customers



Competitive Alternatives for Phone Service

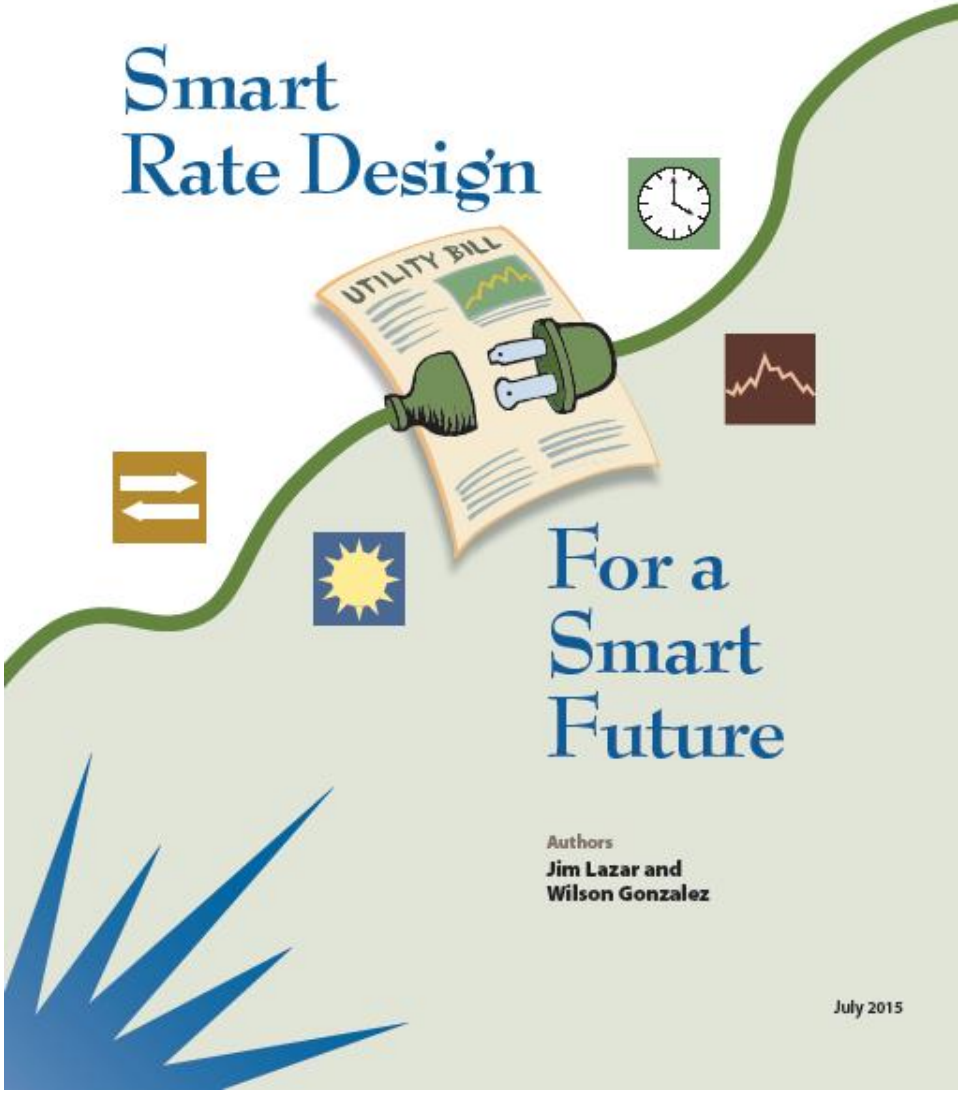
TRACFONE®

$7/month
150 minutes

Straight Talk®

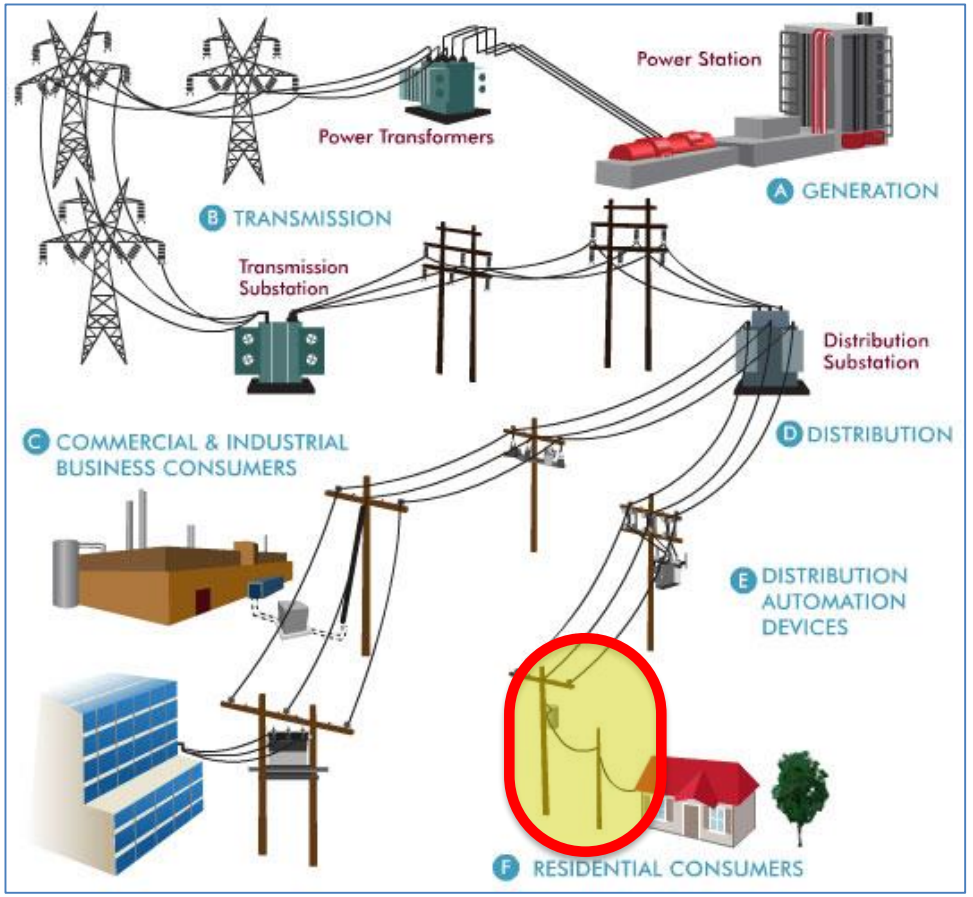
$15/month
Unlimited

RAP® Energy solutions for a changing world



Principle #1

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

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

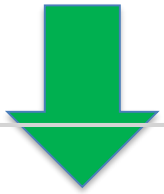
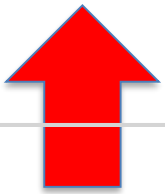
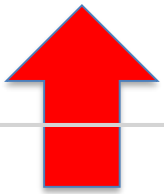
Principle #3

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

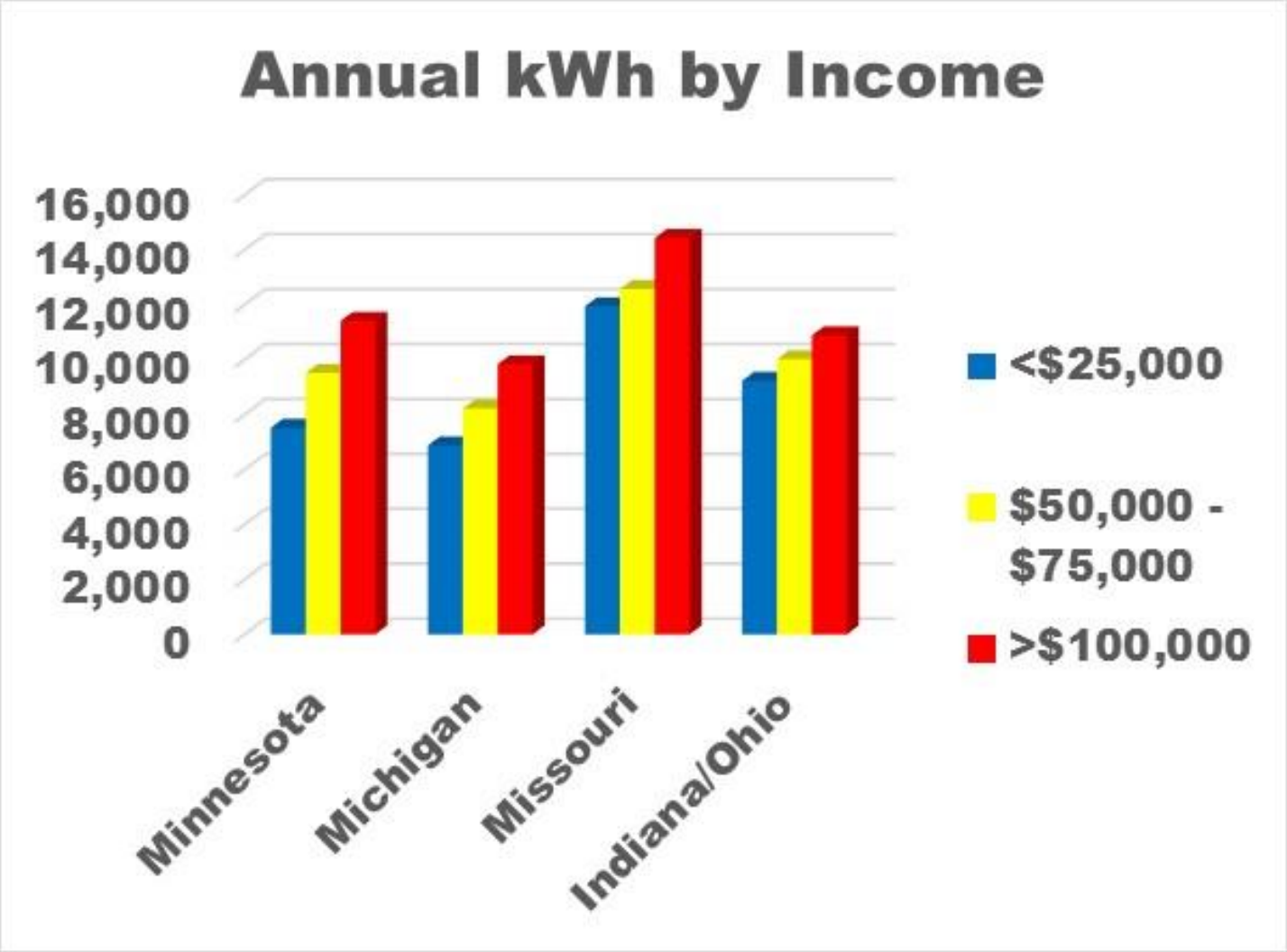
A Simple Cost-Based Residential Rate Design

Cost to Connect to the Grid		
Billing	$/mo	$ 4.00
Line Transformer	$/kVA/Mo	$ 1.00
Bi-Directional Grid and Power Supply		
Off-Peak	$/kWh	$ 0.07
Mid-Peak	$/kWh	$ 0.09
On-Peak	$/kWh	$ 0.14
Critical Peak	$/kWh	$ 0.74

Impact of Rate Design on Usage

	Simple Flat Rate	Inclining Block	High Fixed Charge	Demand Charge
Customer Charge	$ 5.00	$ 5.00	$ 45.00	$ 5.00
Demand Charge	None	None	None	$8.00/kW
First 500 kWh	$ 0.12	$ 0.08	$ 0.08	$ 0.08
Over 500 kWh	$ 0.12	$ 0.15	$ 0.08	$ 0.08
Impact on Usage				

Impact on Low-Income Consumers



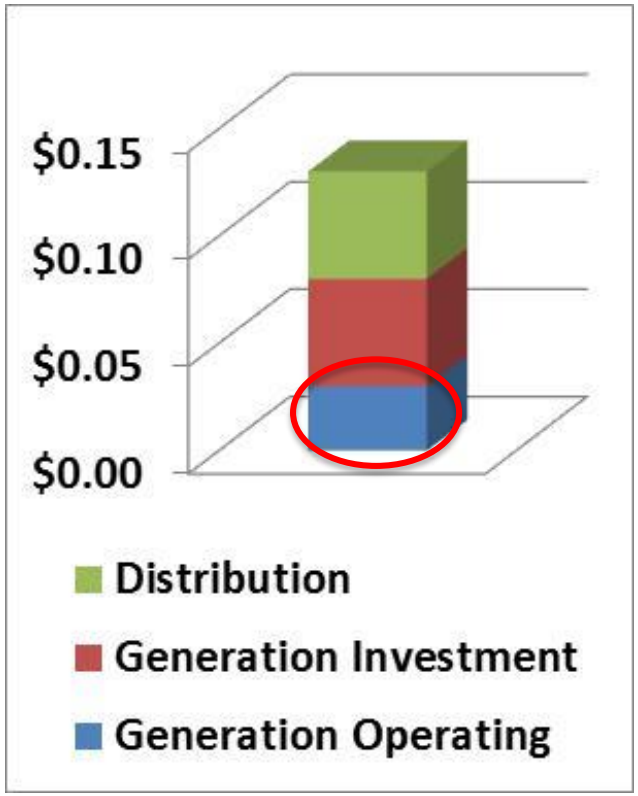
The Solar Issue

- Solar customers use the grid.
- Under net-metering, they may pay little towards the cost of the grid.
- BUT, they supply a valuable resource
  - Daytime power is more valuable
  - Clean power is more valuable
  - Injected into the grid near loads

Two Views of Cost Recovery

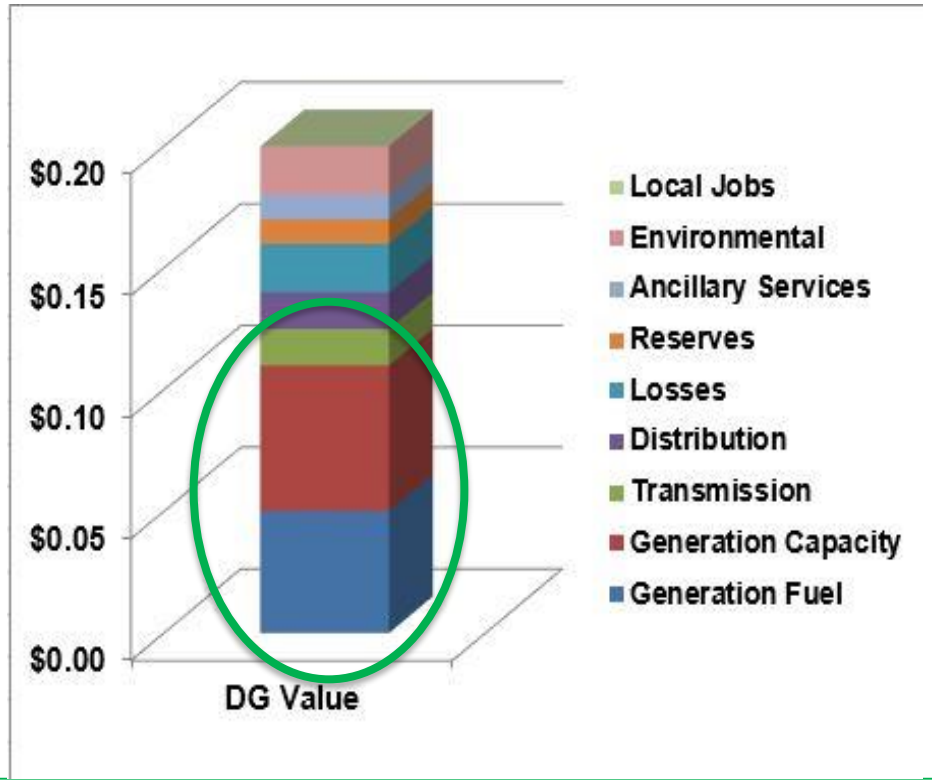
Traditional Utility View

- DG customer "uses" the grid and should pay for it;



Solar Advocate View

- Value of distributed resource is greater than the than retail rate;

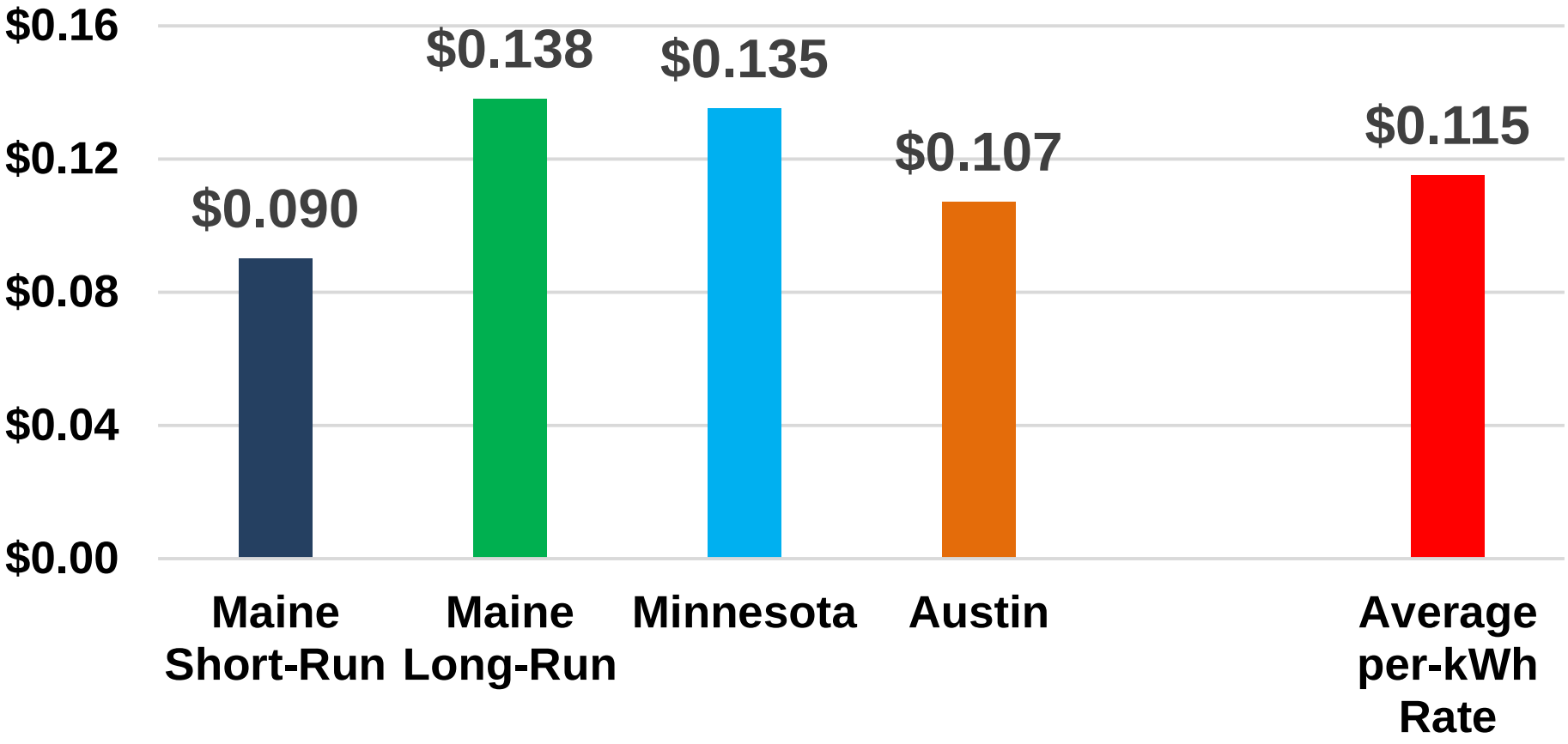


All Tomatoes Are Not Equal

Options for Solar

- **Net-Metering:** Until penetration rises above 5%; net-metering impact is not meaningful.
- "**Value of Solar**" approach may achieve fair compensation (Minnesota, Austin)
- **Unbundled:** Power + Delivery charged when customer gets grid power; only power cost credited when customer supplies power to the grid (Hawaii).

Value of Solar Studies: Utility Economic Values Only



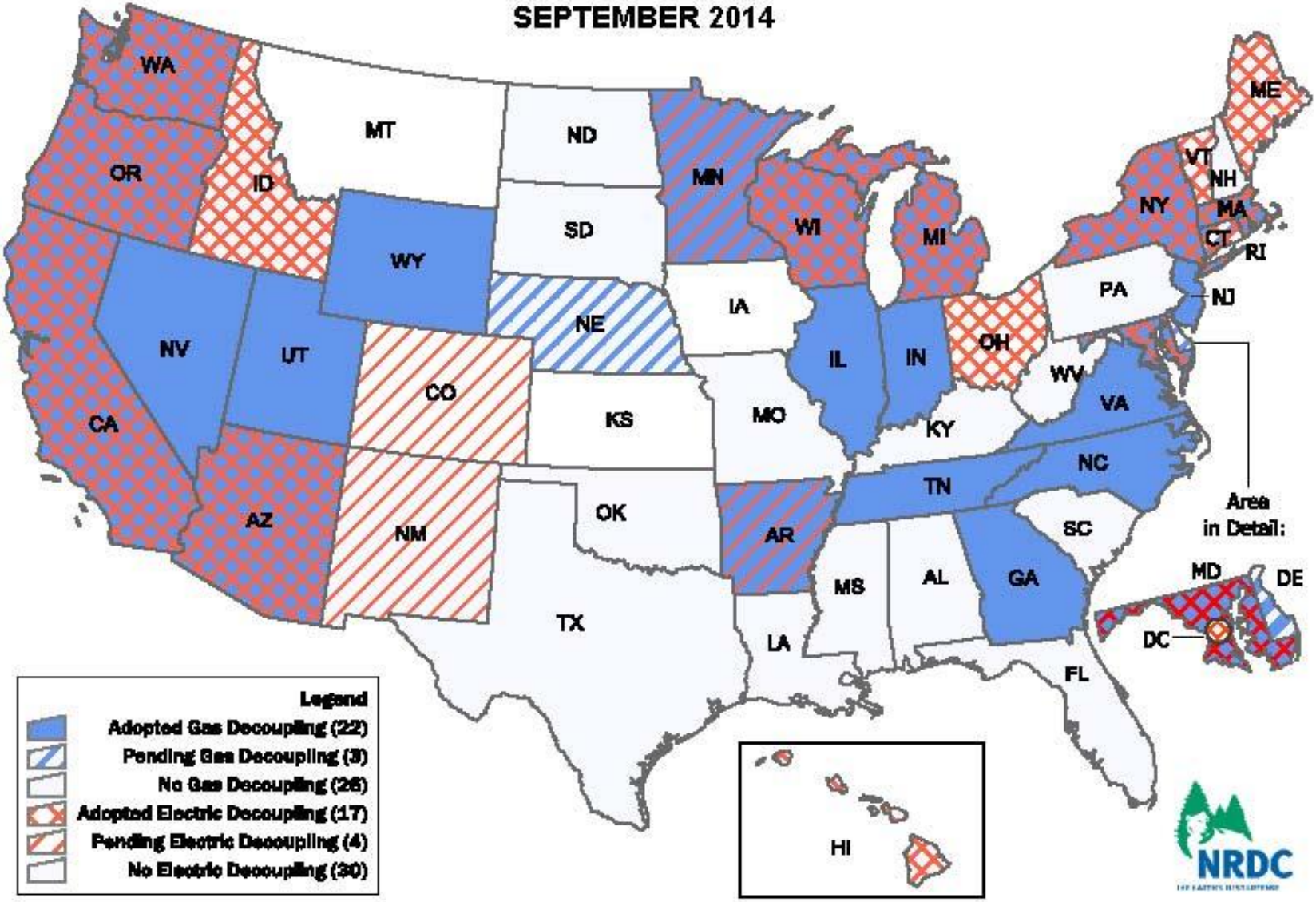
Hawaiian Electric Post-NEM Rate Design (slightly simplified)

- Customer Charge: $9.00/month
- Delivery Charge $0.10/kWh
  (all kWh received from utility)
- Energy Charge $.136/kWh
  (all kWh received from utility)
- Solar Credit: $.151/kWh
  (all kWh supplied to utility)

Revenue Decoupling

- Periodic rate adjustment to reflect actual sales varying from the assumption made when rates were set.
- Used in 27 states for a mix of electric and natural gas utilities.
- Eliminates the utility concern for sales levels.
- Allows progressive rate design to provide appropriate customer incentives to conserve.
- Reduces utility risk and cost of capital.

Gas and Electric Decoupling in the US



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 and natural gas sectors. 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

Learn more about RAP at www.raponline.org

The Regulatory Assistance Project
Beijing, China • Berlin, Germany • Brussels, Belgium • **Montpelier, Vermont USA** • New Delhi, India
50 State Street, Suite 3 • Montpelier, VT 05602 • *phone:* +1 802-223-8199 • *fax:* +1 802-223-8172
www.raponline.org

Customer Concerns with Changing Rate Structures

Midwest Governors' Association
June 28, 2016

David Springe
Executive Director
National Assn. of State Utility Consumer Advocates

Utility 2.0 - What's Changed?

- Utility
  - Still a natural monopoly (at least transmission and distribution)
  - Still provide basic services for vast majority of customers
  - Still entitled to reasonable opportunity to recover costs
- Regulators
  - Still review and allocate utility costs
  - Design rates for cost recovery (efficient and equitable)
- Customers
  - Don't care much about electricity, as long as it works
  - Don't like bill increases, or even bills
- Technology challenges us to rethink these relationships
- Same old story……..nothing has changed

Bonbright's Principles on Rates

- Acceptance, understandability, feasibility of application: convenience and simplicity
- Reasonable opportunity to recover allowed cost of service
- Rate continuity: stability and predictability of rates themselves
- Economically efficient use of facilities and resources
- Fairness and avoidance of undue discrimination

  – Bonbright, Principles of Public Utility Rates, 1988

Rate Classes

- How do you define rate classes
  - Do all customers in a class have like characteristics and usage?
- Is a customer without distributed generation the same as a customer that generates and exports to the grid
- What is “due” verse “undue” discrimination
- Should you change rates for all customers in a class to deal with the challenge caused by a few customers

Rate Options

- Low customer charge - high volumetric charge
- High customer charge – low volumetric charge
- Time variable volumetric charges
- Demand rates
- Other Policy questions
  - Decoupling
  - Performance Based Rates
  - Mandatory/voluntary options

Low Customer Charge – High Volumetric rates

- Pros:
  - Status Quo: Customers understand kWh usage
  - Allocate costs to small and large users rather elegantly
  - Smart meters actually read kWh's
  - Do encourage conservation practices
  - Can message importance of peak reduction
- Cons
  - Increased utility revenue volatility
  - Net metering for DG increasingly challenged

High Customer Charge – Low Volumetric rates

- Pros
  - Utility revenue assurance
- Cons
  - Increase bills for small users and decreased bills for large users
  - Encourages increased usage
  - Calls into question the need for smart meters
  - Little opportunity for time variable rates
  - May discourage distributed generation
  - Customer frustrations

Time Variable Volumetric Rates

- Pros
  - Also allocate costs to small and larger users rather elegantly
    - Moves towards alignment of price and cost incurrence
  - Customers do understand kWh's
  - Smart meters actually read kWh's
    - Can set discrete pricing times to send better price signals
  - Do encourage/incent conservation
  - Can reward peak reductions
  - More closely align distributed generation compensation
  - Can produce more revenue stability for utility
- Cons
  - Meters/back office and billing can be costly
  - Education component
  - Self selection challenge if voluntary

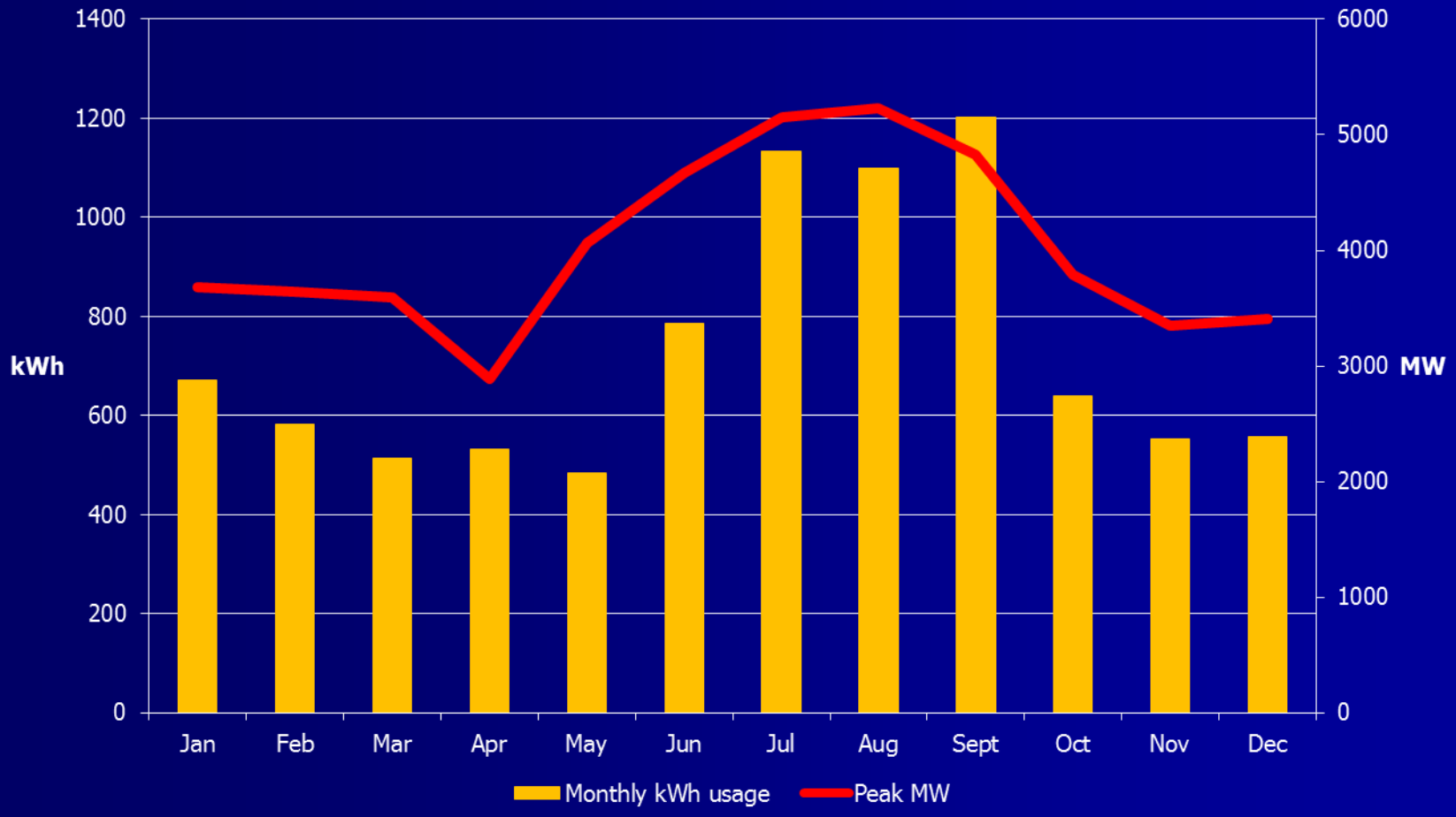
Demand Rates (kW)

- Pros
  - If designed correctly can capture customer contribution to peak needs
    - Theoretical alignment between pricing mechanism and cost incurrence
  - If designed correctly can incent moving usage off-peak
  - Increased utility revenue assurance
  - One method of capturing distributed generator grid needs

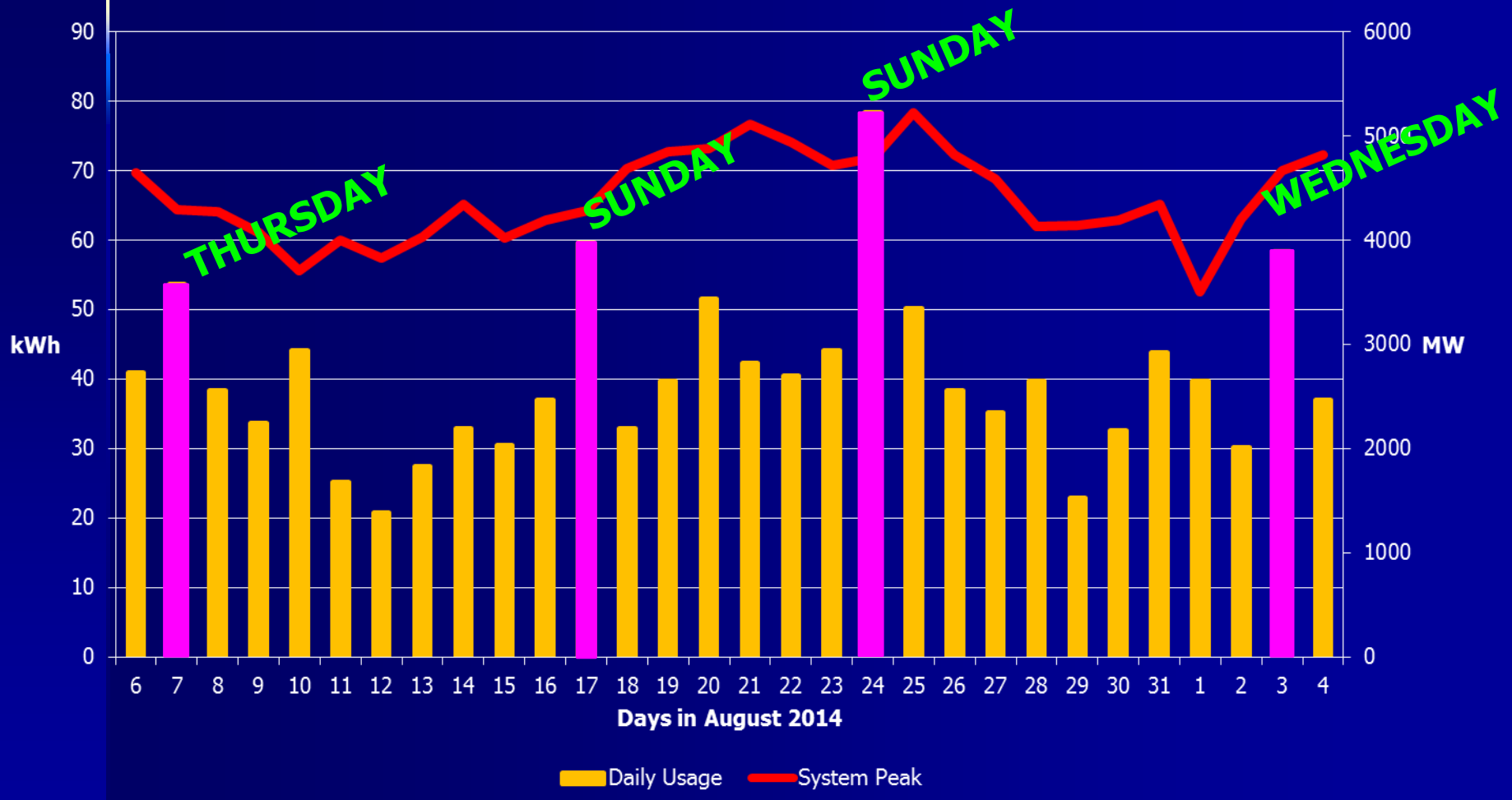
Demand Rates (kW)

- Cons
  - Difficult to understand, high education challenge
    - Difference between broad concept and actual understanding of KW use
  - Higher bills for low use customers
    - Low use customers may be low income
  - Limited ability to change usage
    - Some things must run (AC, Refrigerator, Medical)
  - Imposed inconvenience on customers
  - Smart meters don't read kW's. Translate kWh's into kW's
  - Residential customers have higher diversity of use than large commercial or industrial customers
  - Bill instability
    - Difficult to know when peak
    - Higher chance for unpredictable and surprising bills
  - Meters/back office and billing can be costly
  - Very difficult to calculate correct KW rate in ratemaking process

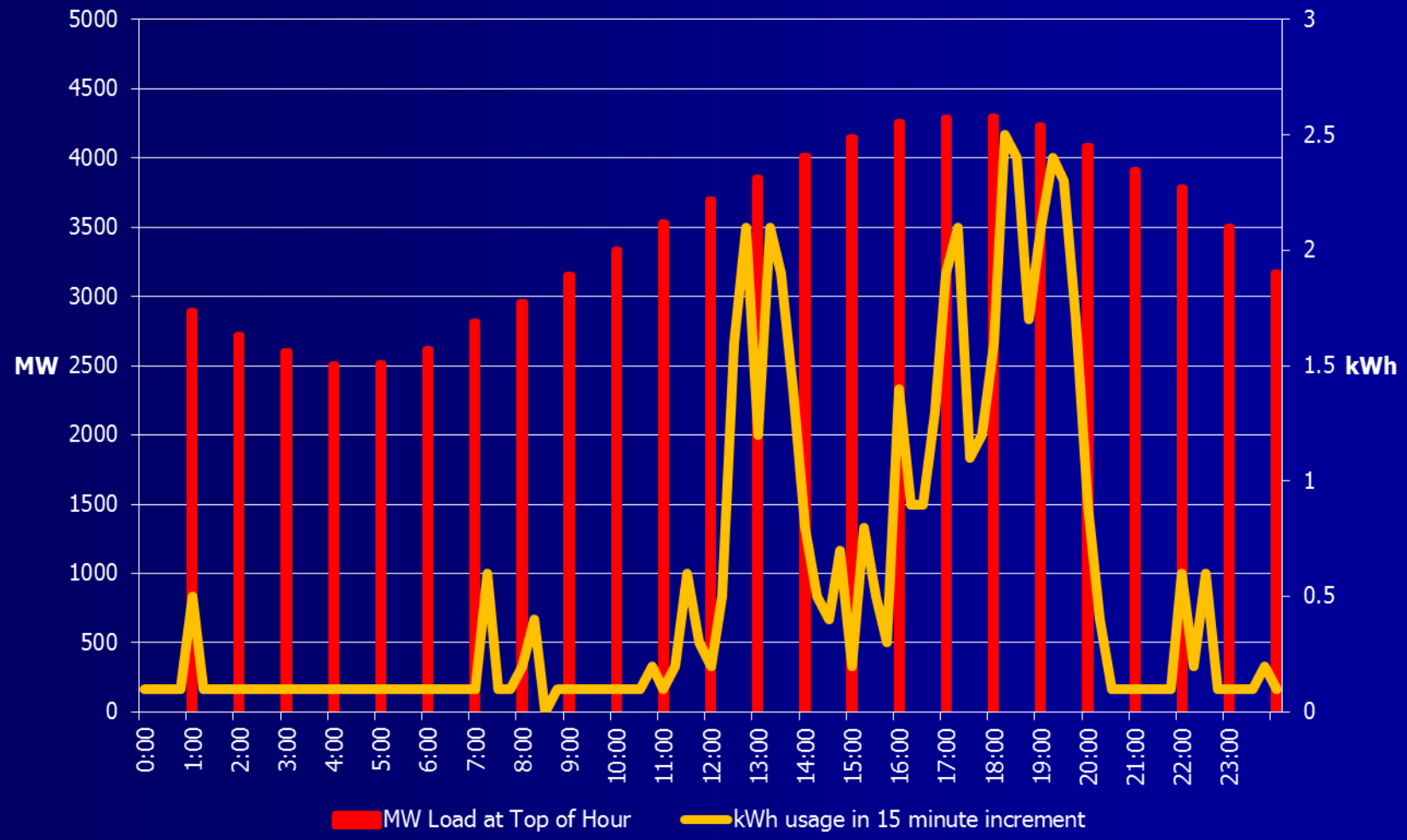
2014 Monthly kWh Usage vs System Peak (MW)



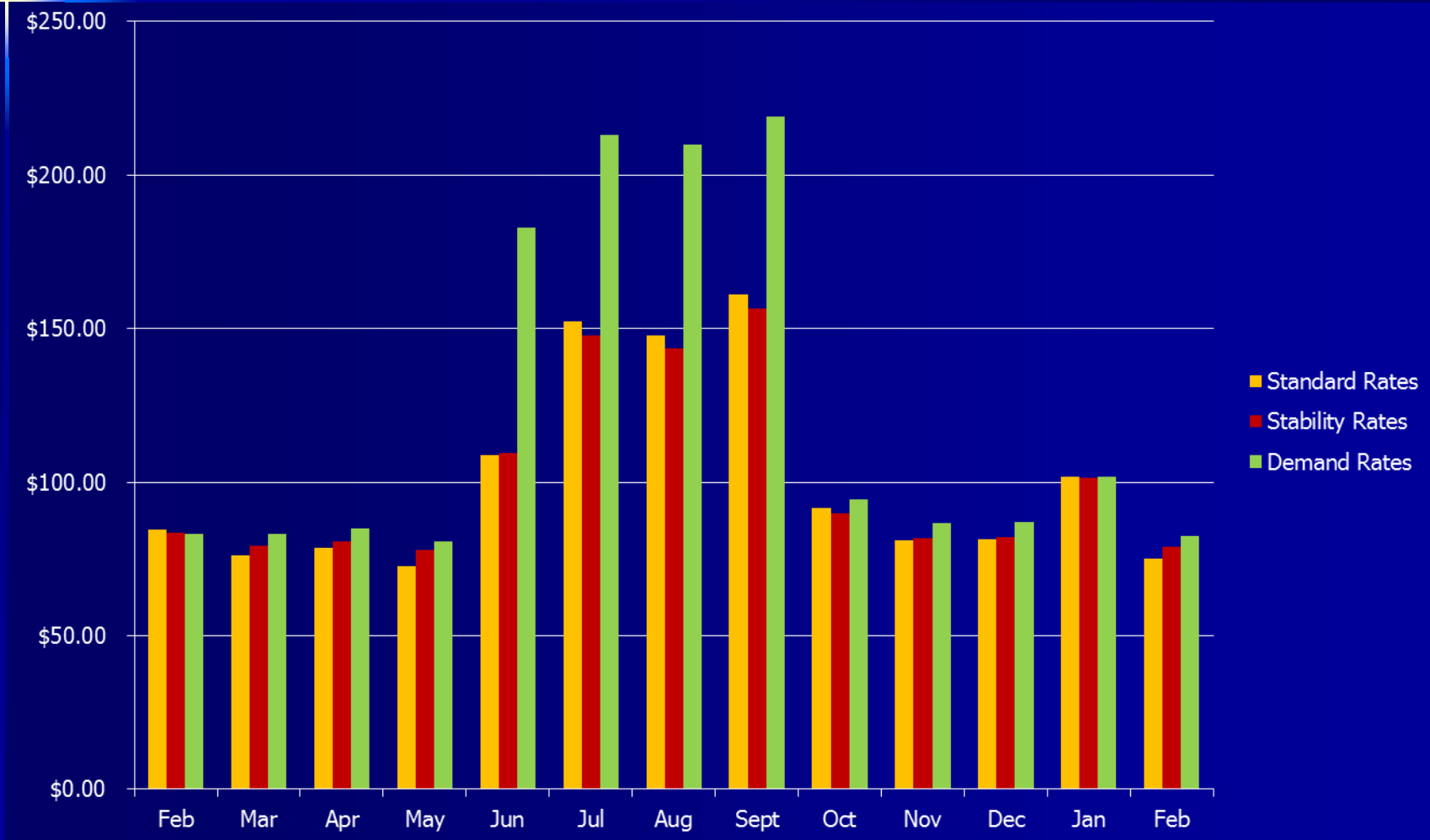
August Billing Cycle:
Daily kWh usage vs Daily System Peak (MW)



August 7, 2014
kWh usage (15 minute increments) vs Hourly System Load (MW)



Bill impacts: Standard Rates verse Demand Rates



Predictable Result

Rate Policy Questions

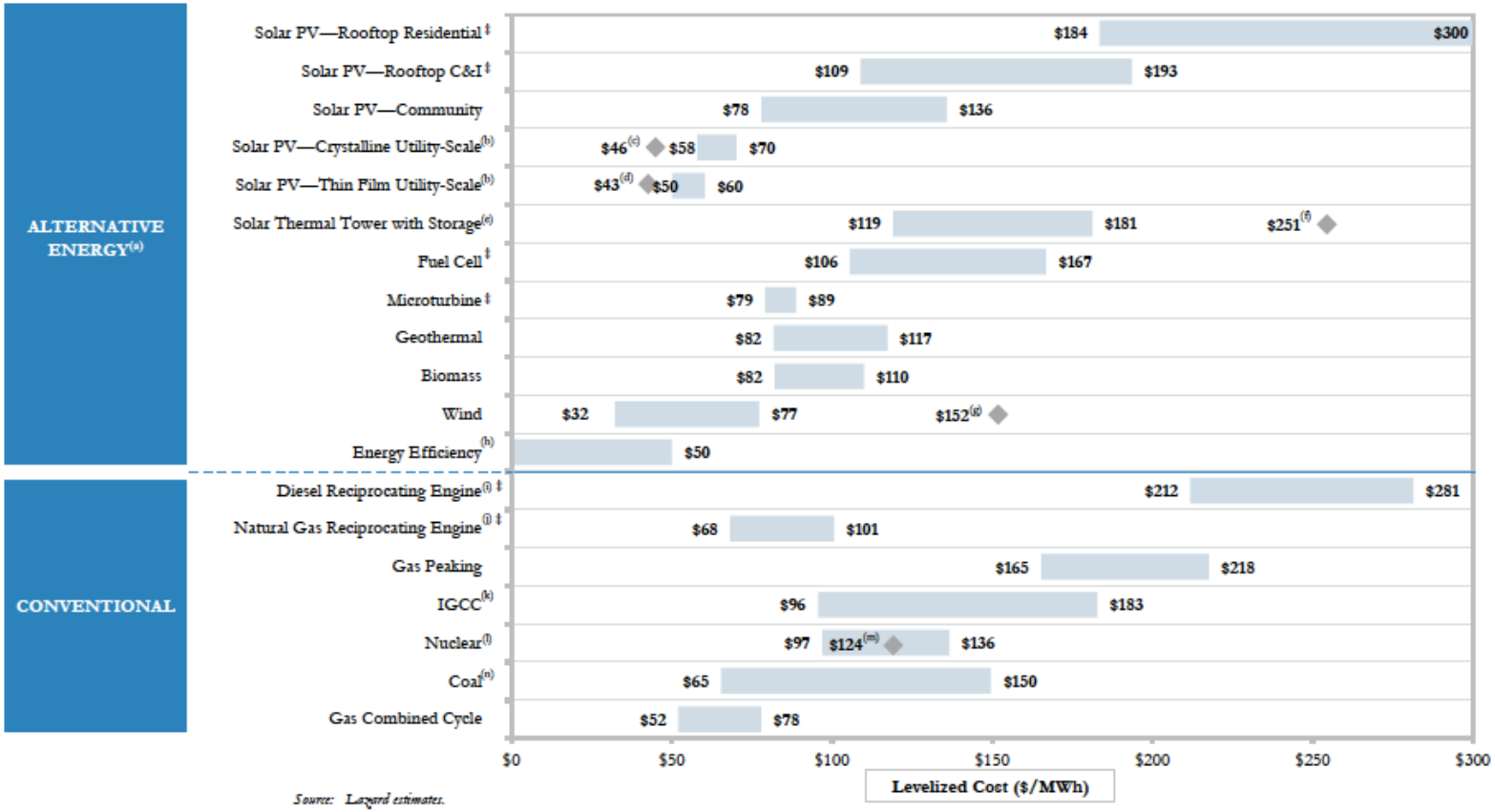
- Decoupling
  - Can help with utility revenue assurances
  - Revenue guarantees should come with lower profits/rates
- Performance based rates
  - Data dependent
  - Asymmetric information/resources challenge
- Mandatory/voluntary rate options
  - Voluntary: self selection leads to revenue loses – 2nd order problem
  - Mandatory: unpopular
- Low income/at-risk populations
  - Appropriate protections

The Solar Question

- Within the utility framework, we are still economic regulators
  - Solar generation is getting cheaper, but the price we pay with net metering will continue to increase. Does this make sense?
  - If solar generation is good, shouldn't we buy the cheapest solar generation we can get? Do economies of scale still matter?
  - Distributed generation saves money, and the utilities are proposing to spend $billions in grid modernization to accommodate DG
    - How much will rates increase for everyone to create a modern grid used by a few customers?
  - If you can get all the benefits of solar through conservation and energy efficiency for less cost, which should be encouraged?
  - If we get negative generation prices in the market mid-day should the utility still be paying solar or should solar be paying the utility?

Unsubsidized Levelized Cost of Energy Comparison

Certain Alternative Energy generation technologies are cost-competitive with conventional generation technologies under some scenarios; such observation does not take into account potential social and environmental externalities (e.g., social costs of distributed generation, environmental consequences of certain conventional generation technologies, etc.) or reliability-related considerations (e.g., transmission and back-up generation costs associated with certain Alternative Energy technologies)



Source: *Lazard estimates.*

Note: Here and throughout this presentation, unless otherwise indicated, analysis assumes 60% debt at 8% interest rate and 40% equity at 12% cost for both conventional and Alternative Energy generation technologies. Assumes diesel price of ~$2.50 per gallon, Northern Appalachian bituminous coal price of ~$2.00 per MMBtu and a natural gas price of ~$3.50 per MMBtu for all applicable technologies other than Natural Gas Reciprocating Engine, which assumes ~$5.50 per MMBtu. Analysis does not reflect potential impact of evolving regulations/rules promulgated pursuant to the EPA's Clean Power Plan. **See following page for footnotes.**

‡ Denotes distributed generation technology.

Key Thoughts

- There is no crisis
- Decisions should be made by states based on policy and based on evidence
- Be clear on objectives
- Be deliberative in approach
- Be targeted in actions
- No objectively correct answer

Contact Information

David Springe
National Assn. of State Utility Consumer Advocates (NASUCA)
8383 Colesville Rd., Suite 101
Silver Spring, MD 20910
785-550-7606
david.springe@nasuca.org
www.nasuca.org

Q & A

Thank You!