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National Association of Regulatory Utility Commissioners

AMI Opportunities

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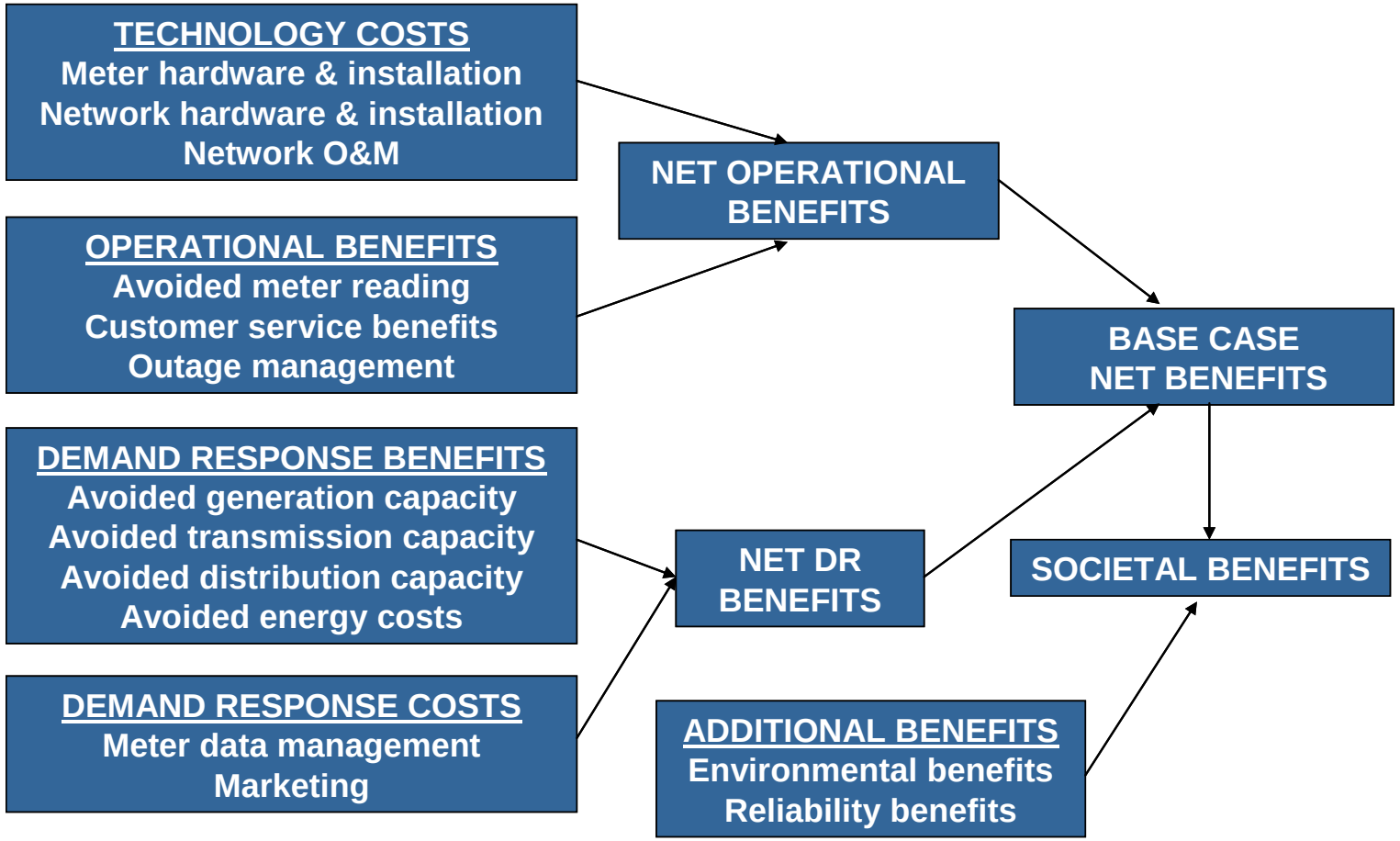
Goals

- Discuss what types of costs, benefits, and issues should be considered when considering implementation of smart meters, based on VT experience
- Discuss some of the opportunities available to combine AMI data with EE programs/offering

Slides courtesy Freeman, Sullivan & Co, modified for this presentation

COSTS AND BENEFITS TO CONSIDER

Cost-effectiveness analysis requires examining costs, operational benefits, demand response, and other EE benefits



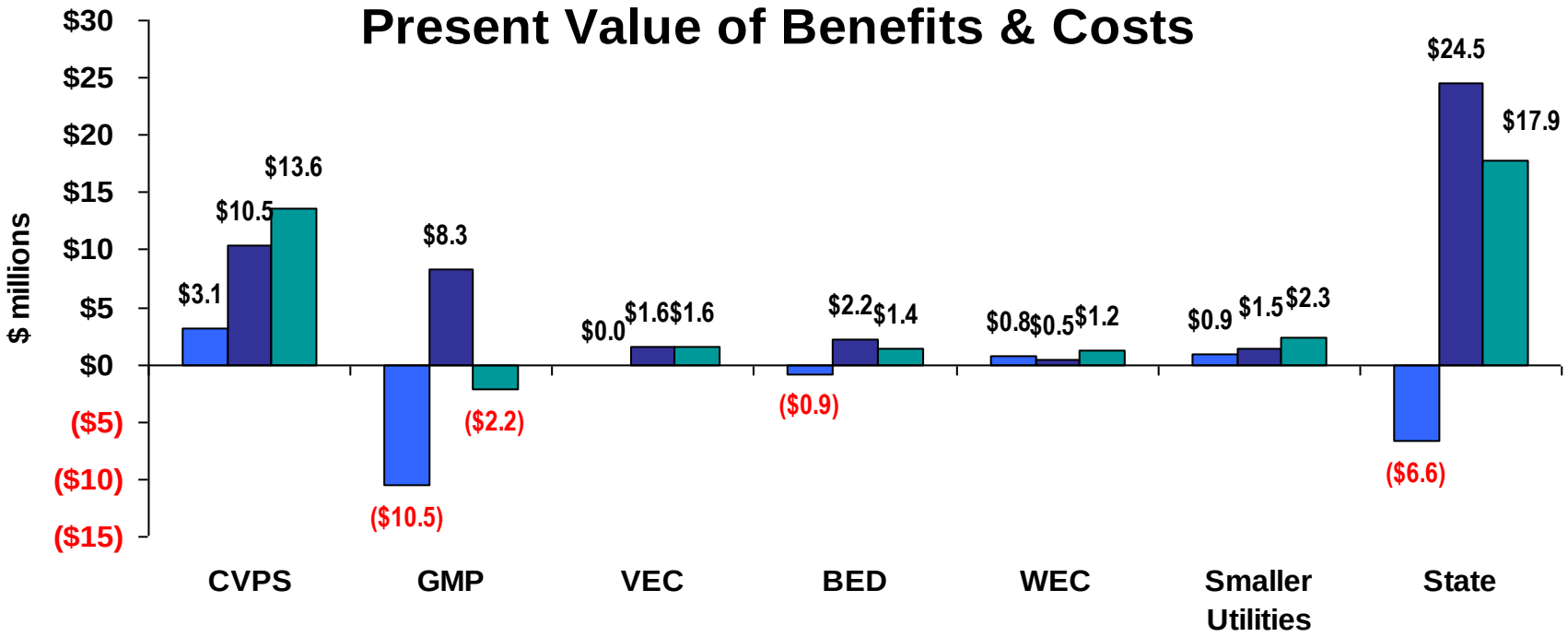
Key Operational Savings Categories

- Avoided meter reading costs 88%
  - Labor and overheads for meter readers and supervisors
  - Avoided vehicle and other equipment costs
  - Savings are offset by severance costs
- Field operations
  - Reduced “no light” calls
  - Reduced storm restoration costs
- Call center
  - Fewer bill complaints from estimated bills
- Reduced meter O&M costs during warranty period
  - Normal O&M avoided in all future years and counted as a benefit
  - O&M for new meters is included on the cost side of the ledger with $0 costs during warranty period

Other Benefit Streams

- Environmental Benefits
  - If Demand Response only, quite small. However if add efficiency, these could grow
- Outage Reduction
    - Claim outage reduction up to 35%

Example Results – Vermont Utilities



Does not include EE savings, includes low estimate of outage reduction benefits

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Federal Money Helps!

AMI technology implementation

- Work to establish minimum technology requirements
- Select technology that fits for your situation
- Direct utilities to commit to benefits to be achieved with AMI, then Evaluate their progress/success
- AMI implementation should include Meter Data Management System (MDMS) and billing support for time-based pricing

Rate design

- Determine whether alternative pricing strategies that take advantage of AMI are warranted
- Initiate investigation into variety of issues associated with time-based pricing
  - What are the underlying principles guiding rate design
  - Type of pricing (e.g., TOU, CPP, etc.)
  - Differential impact on various customer segments
  - Understandability of various options
  - Magnitude of hedging premium for non-time varying rate option
  - Interplay with block pricing and energy efficiency initiatives
  - Operational challenges for small utilities
  - Implications for revenue stability

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Other Issues to Consider – Be Wary of

- Opt-out
- Privacy
- RF
- Cyber-Security

Slides courtesy of Burlington Electric Department and Green Mountain Power

CUSTOMER/UTILITY OPPORTUNITIES

Information = Power

If you can measure it
you can improve it

Check your usage

Your smart meter helps you understand your energy use

Welcome back,
CHRIS BURNS
Account #: 260440-59031

Current Bill Period ends:
OCT 31

Website updated through:
2013-10-11 16:00

Edit Profile

Electric Costs

$63
Projected

As of OCT 11
$22

Details

Your pricing plan is currently set for Residential Service (Residential Service)

Electric Usage

Usage is down
15%

Details

Current average daily usage compared to last bill period.

Environmental Impact

propane tank
0

Details

Burning this much propane equals your impact within the current bill period.

Feedback

Cut Costs

Weatherproof your windows

Re-glaze leaky, broken window panes.

More Ways to Cut Costs

Be Efficient

Manage your energy usage

Install a programmable thermostat to maintain a comfortable temperature in your home and to manage usage during the winter and summer months.

More Ways to Use Less

Reduce Your Impact

Plant some deciduous trees

Reduce your heating and cooling costs with an energy-efficient landscape design

.

More Ways to Go Green

Log Out | Help

Dashboard | My Energy | Alerts | Profile

Cost | **Usage** | Impact

Electric Usage

Usage is down **15** %

Current average daily usage compared to last bill period.

What should I be looking for?

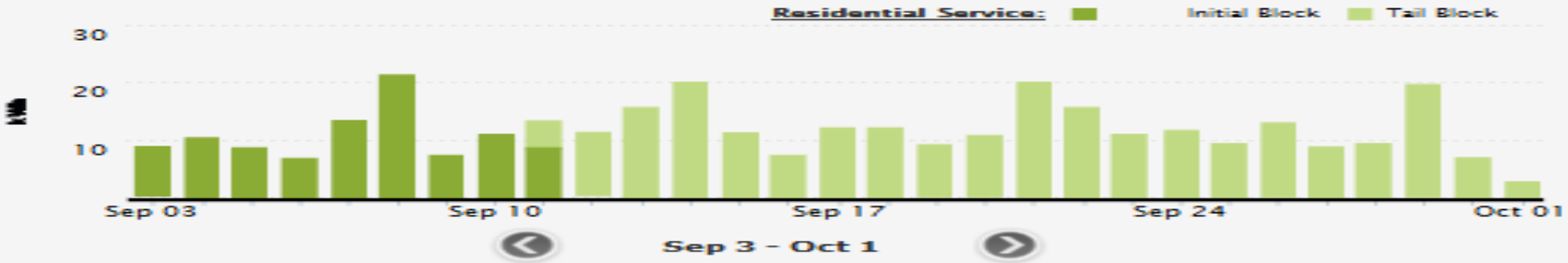
Use the detail graph below to zoom out to view your usage over multiple bill periods.

Now, ask yourself these questions:

- Are these changes caused by an effort to adjust your temperature for the weather?
- Can any of these changes be attributed to new appliances or a change in behavior?

My Usage Details

Zoom: 1 day | 1 bill period | 1 year



Date	Initial Block	Tail Block	Total
09/03/13 - 09/30/13	100.0	251.1	351.1

Note: Totals may not add up due to rounding.

CSV Download

Green Button Download My Data

More Details

Feedback

Cut Costs

Tune up your heating and cooling system

Hire a qualified professional to inspect and maintain your heating and cooling system.

More Ways to Cut Costs

Be Efficient

Manage your energy usage

Install a programmable thermostat to maintain a comfortable temperature in your home and to manage usage during the winter and summer months.

More Ways to Use Less

Reduce Your Impact

Plant some deciduous trees

Reduce your heating and cooling costs with an energy-efficient landscape design

.

More Ways to Go Green

Log Out | Help

Dashboard | My Energy | Alerts | Profile

Cost | **Usage** | Impact

Electric Usage

Usage is down **15**%

Current average daily usage compared to last bill period.

What should I be looking for?

Look at your usage during times that you aren't using power; on vacation (days) or asleep (hours). This usage might be attributed to things that are running that don't need to be.

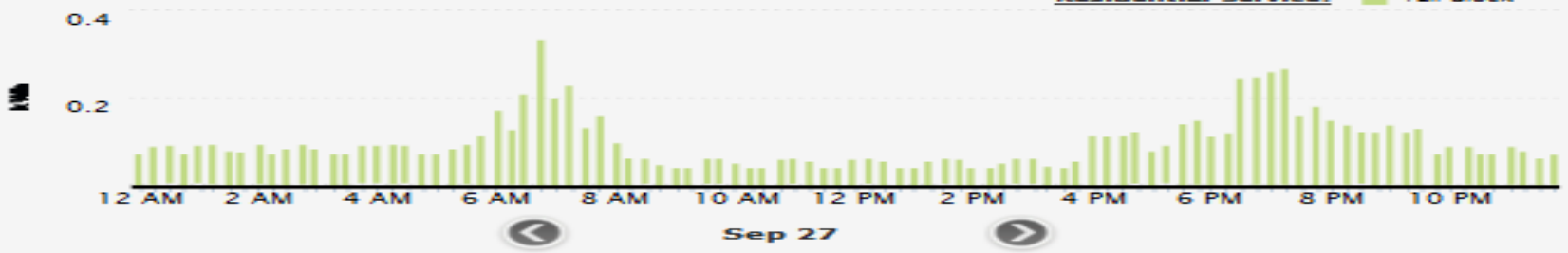
Now, ask yourself these questions:

- Do these things need to be on during those times?
- Could a timer/outlet be a worthwhile purchase to manage these appliances during off hours?

My Usage Details

Zoom: 1 day | 1 bill period | 1 year

Residential Service: Tail Block



Date	Tail Block	Total
Sep 27, 2013	9.5	9.5

Note: Totals may not add up due to rounding.

Download | Green Button Download My Data

More Details

Feedback

Cut Costs

Hang dry your clothes

Run your dryer less and save energy by installing and using a clothes line for drying clothes.

More Ways to Cut Costs

Be Efficient

Practice daylighting

Use windows and skylights to bring natural light into your home and help reduce the need for artificial light.

More Ways to Use Less

Reduce Your Impact

Plant some deciduous trees

Reduce your heating and cooling costs with an energy-efficient landscape design.

More Ways to Go Green

Alert Me When...

My bill reaches my targeted amount

Enter a target and sign up to receive an alert when your bill is on track to reach that amount.

50

No dollar sign needed. Ex. 121.64

- [x] Email
- [x] Text

My daily usage spikes

Sign up to receive alerts when your daily usage hits a new high

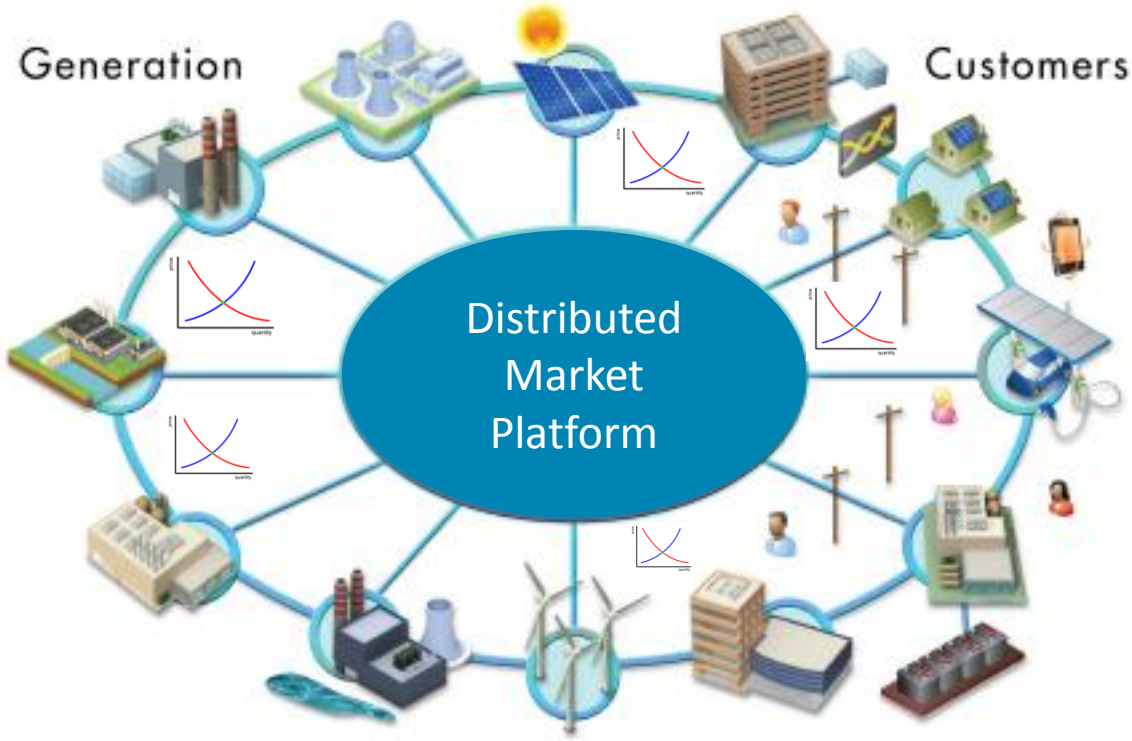
- [x] Email
- [x] Text

Save

GMP Grid of the Future

Guiding Philosophy: Shift the locus of control from the bulk power grid to the near customer distribution grid and subject as much as possible to market forces.

- Create a market platform leveraging distributed marginal pricing
- Exploit and create value from energy supply and demand assets behind customer meter
- Leverage advanced software and controls to automate grid observation and response functions for greater resilience and efficiency
- New network investment dictated by market forces rather than utility command and control



GMP Demand Response Strategy

- Proliferate as many controllable thermal storage devices as possible behind the meter (water heaters, ice storage, etc.)
- Engage and control installed devices as we build the automation infrastructure
- When Mitsubishi and Fujitsu heat pumps embed control capability, we will begin utilizing those models
- Potential for installed control retrofits as well

Questions