

City of Fort Collins

2011 Residential Environmental Program Series



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**Streamed video and powerpoints
available at**

www.fcgov.com/rep

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2011 Residential Environmental Program Series

Adventures in composting

May 11

Ease your curiosity about how to recycle your household yard and food waste and learn the art and science of backyard composting.



City of Fort Collins

2011 Residential Environmental Program Series

Smart Meter Fort Collins

Agenda

Presentation: Fort Collins' Smart Grid

Focus group discussion

Automated response
and open dialog

Break: cookies and door prizes





Fort Collins' Smart Grid

Smart Meter Fort Collins
Residential Environmental Program Series
April 27, 2011



The 3 Faces of Our Smart Grid



Ongoing Utility Modernization
(e.g. Smart Meter Fort Collins)

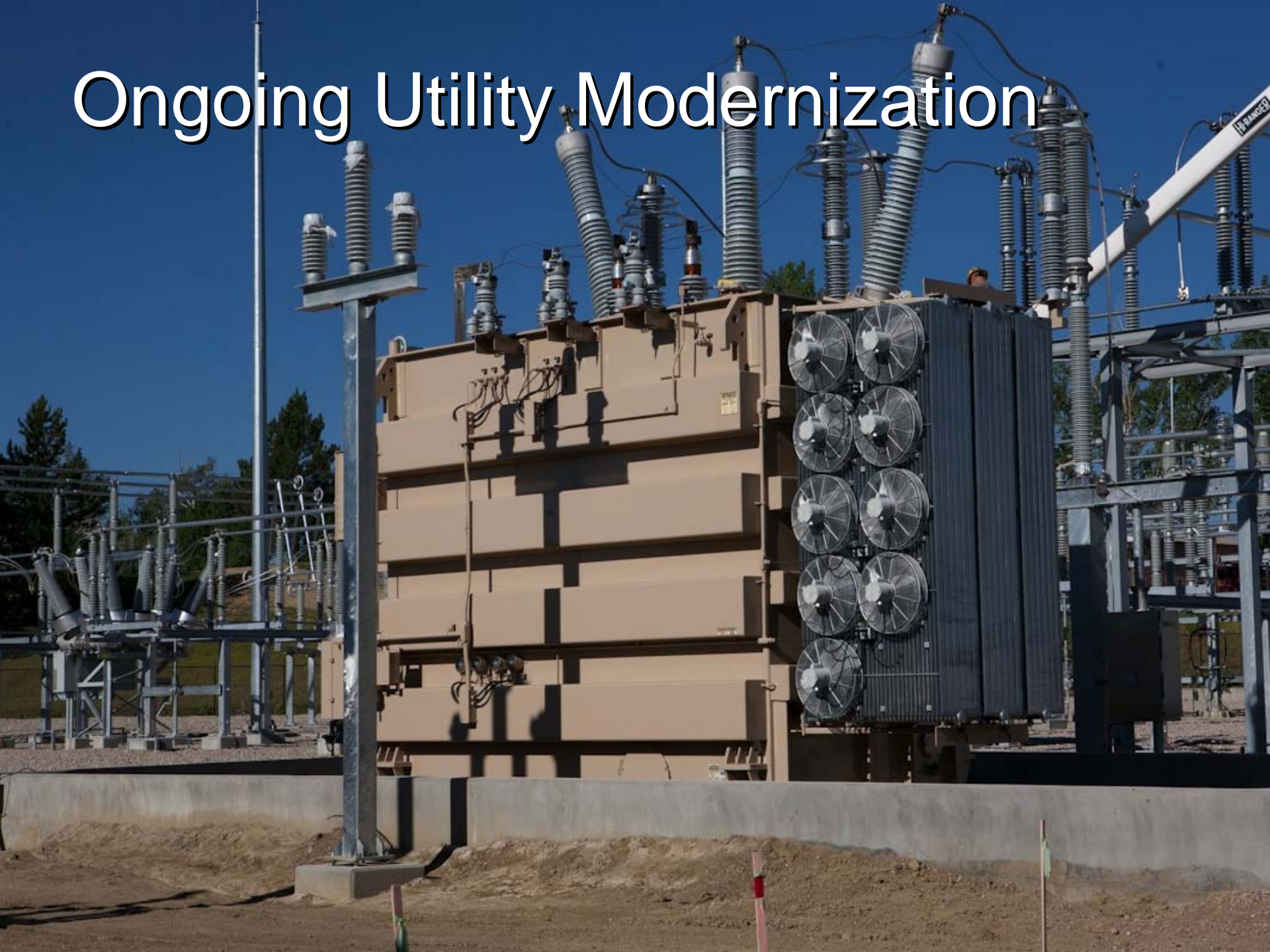


Local **Green Energy**
(e.g. Fort ZED)



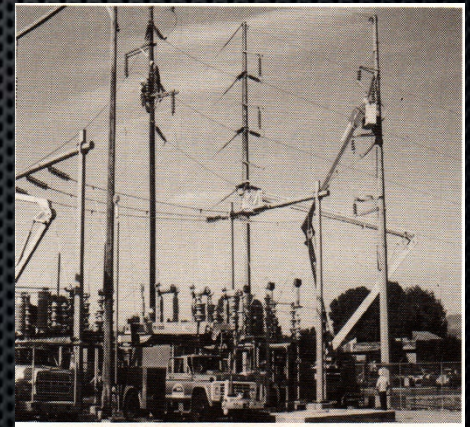
New Customer Options
(e.g. Smart Energy Pioneer Program)

Ongoing Utility Modernization



Ongoing Utility Modernization

- 1968 Under-ground Distribution System
- 1979 Remote System Monitoring (SCADA)
- 1982 Demand Side Management
- 1990 Remote Commercial Meter Reading
- 1999 Substation Automation
- *2012/2013 Small Commercial & Residential Remote Meter Reading, (Smart Meter Fort Collins)*

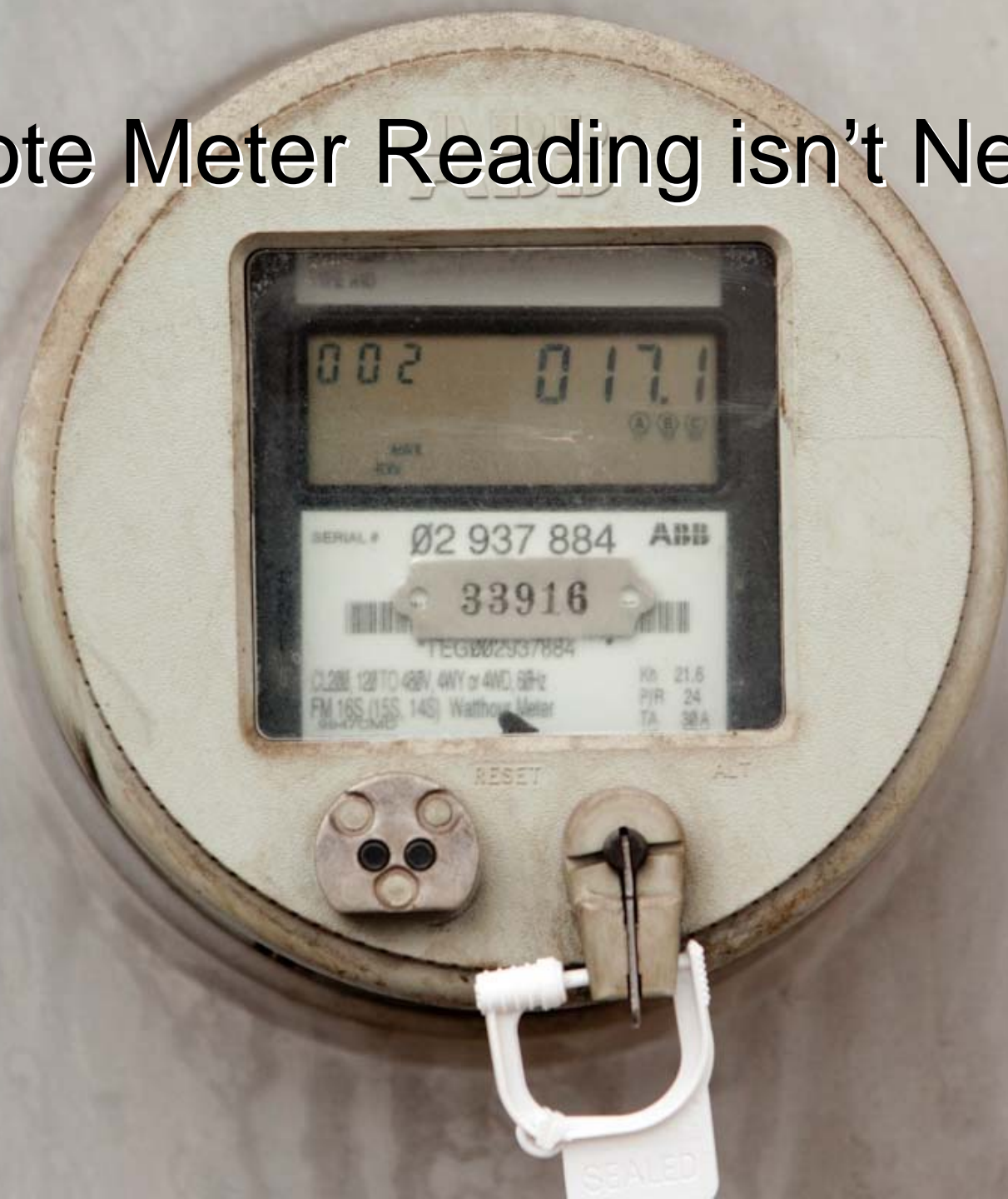




Smart Meter Fort Collins

- New electronic meters (electric and water)
- \$32M total cost, \$16M from a Department of Energy Grant
- Approximately 10-year payback from operational savings (i.e. meter reading)
- Most meters installed from mid-2012 through mid-2013

Remote Meter Reading isn't New to Us



But it might be new to you





Ongoing Utility Modernization

Results: Higher Reliability &
Lower Operating Costs

- Our customers have some of the lowest bills in the state
- Our 99.99% reliability attracts and keeps tech business
- Remote monitoring speeds repair and reduces truck-rolls
- Remote meter reading reduces operational costs
- A smart grid is an integral part of our past and future



Local Green Energy

lowering the cost of adding renewables

More of this...



Less of this...





Local Green Energy

Clouds with a Solar Lining



Solar energy (photovoltaic) is getting cheaper, and cheaper.



But, when a cloud passes between the sun and a solar panel, output can drop in just seconds.



Balancing the grid traditionally means adding backup generators (e.g. peakers).



With a smarter grid, we can balance the grid with existing load and generation – saving money!



Today (without smart grid)





Today (without smart grid)





Today (without smart grid)





Tomorrow



With Smart Grid



Tomorrow



With Smart Grid



Tomorrow



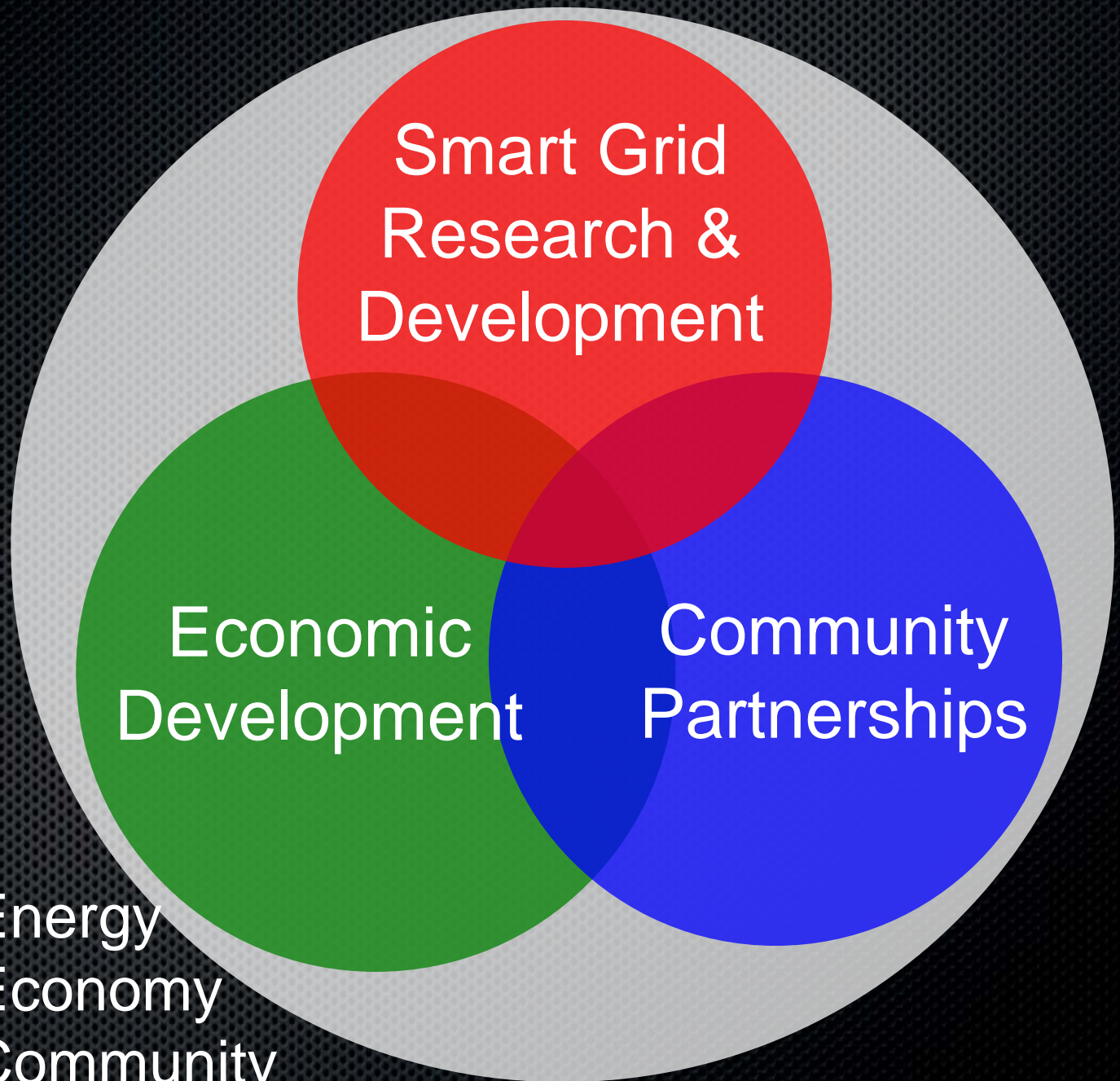
With Smart Grid



Local Green Energy



a Key Goal of FortZED



FortZED

Sustainable Energy
Sustainable Economy
Sustainable Community



Fort ZED: Energy

Department of Energy Demonstration Project
Renewable & Distributed System Integration (RDSI)

GOAL: Demonstrate that cost of adding renewables (e.g. solar) can be reduced by intelligently balancing load and onsite generation instead of building conventional power plants (e.g. peakers).

This is the part of FortZED that is
part of our Smart Grid.

Fort ZED

Economic Development

GOAL: Fort Collins as a Clean Energy Industry and Research Leader. Increase primary jobs.





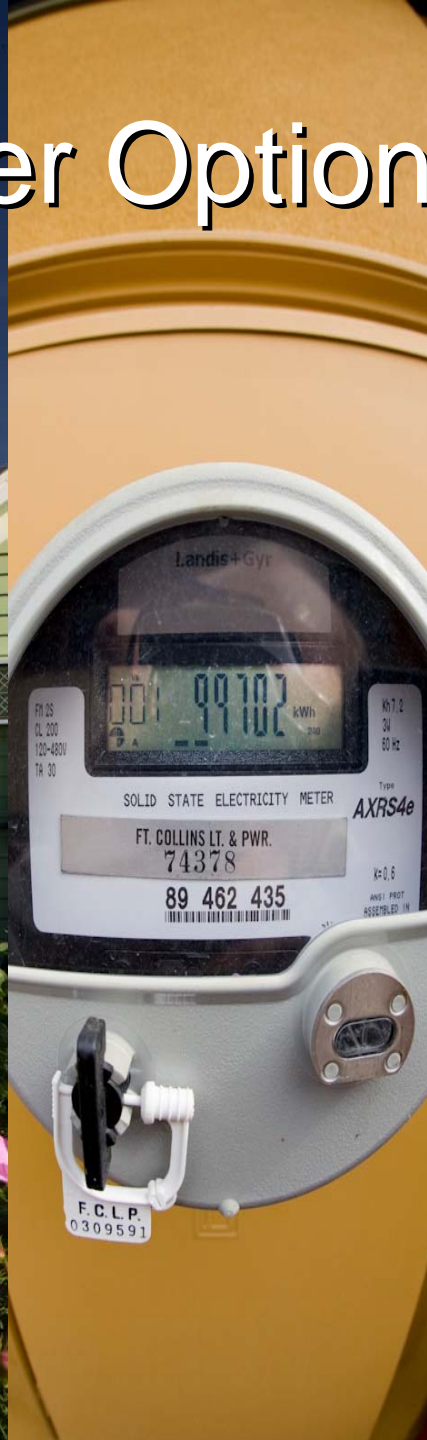
Fort ZED Community Partnerships

GOAL: Make a Clean Energy Future a Cornerstone of our Community.





New Customer Options & Choices





New Customer Options & Choices

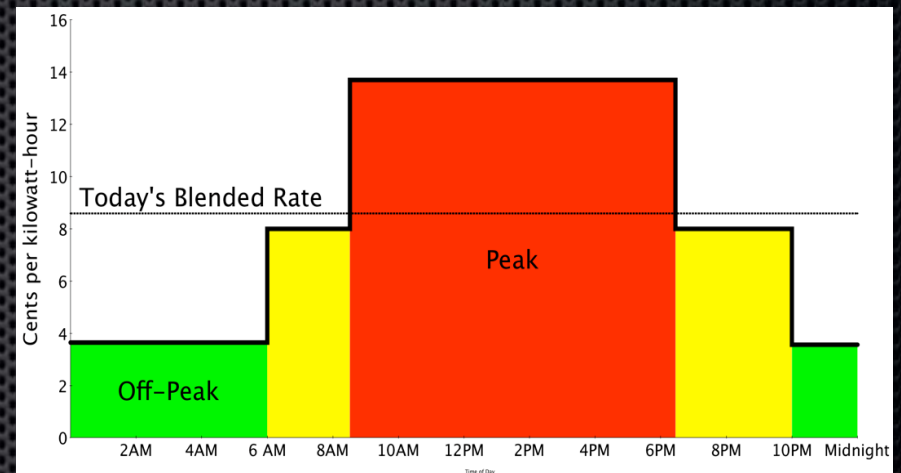
- Smart Consumer – know what your bill is before you get it
- Smart Rate Options:
 - Recharge your electric vehicle when it is cheapest
 - Sell your solar energy to the grid when it is more valuable
 - Smart Home – emerging smart appliances will automatically run to save you money





“Smart Energy Pioneer” Pilot Program

- A simple Time-of-Use Rate
- Don't need EV or PV to do this – but it helps!
- Integrate with Home Area Networks
- Limited enrollment

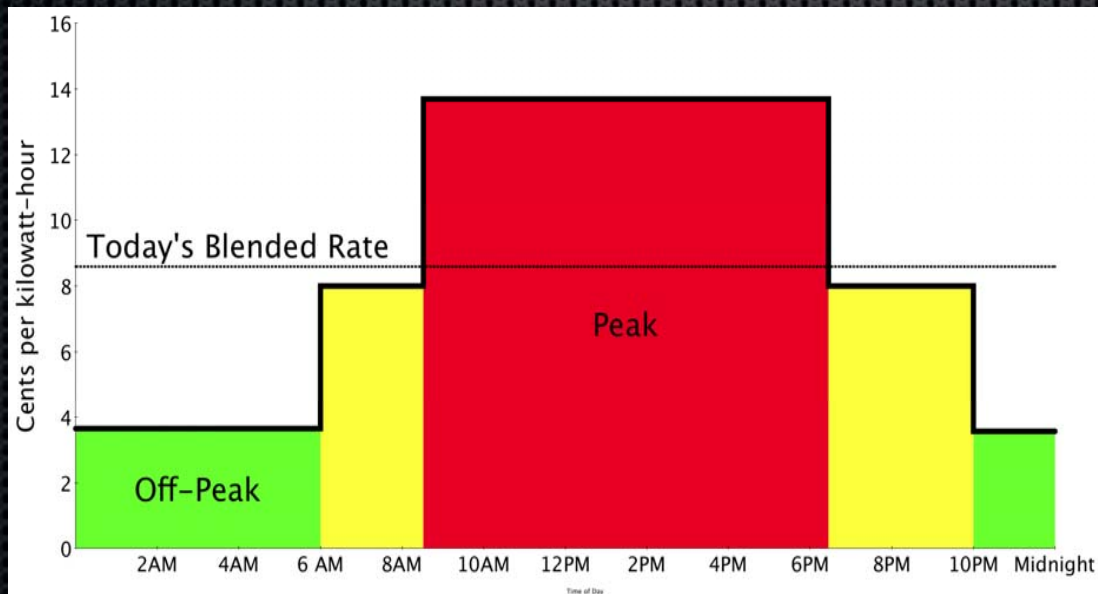


Conceptual Pioneer Smart Rate



Lower Cost Electric Vehicle Charging

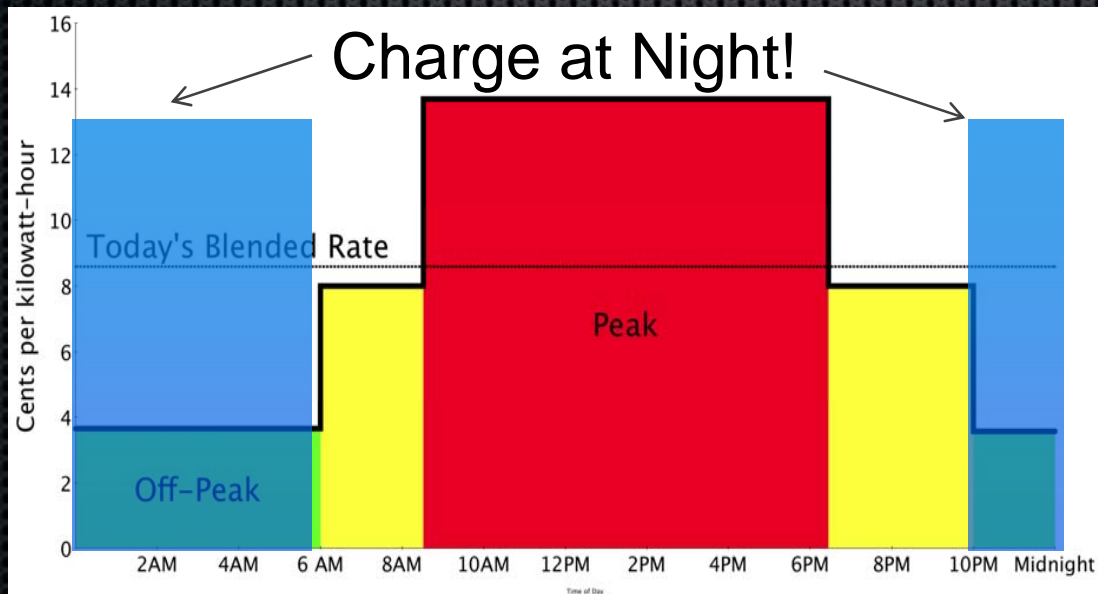
- Charge at night – save 50%!
- We have enough generation and distribution for lots of EVs, but not if they charge at the same time. So this helps all of us.





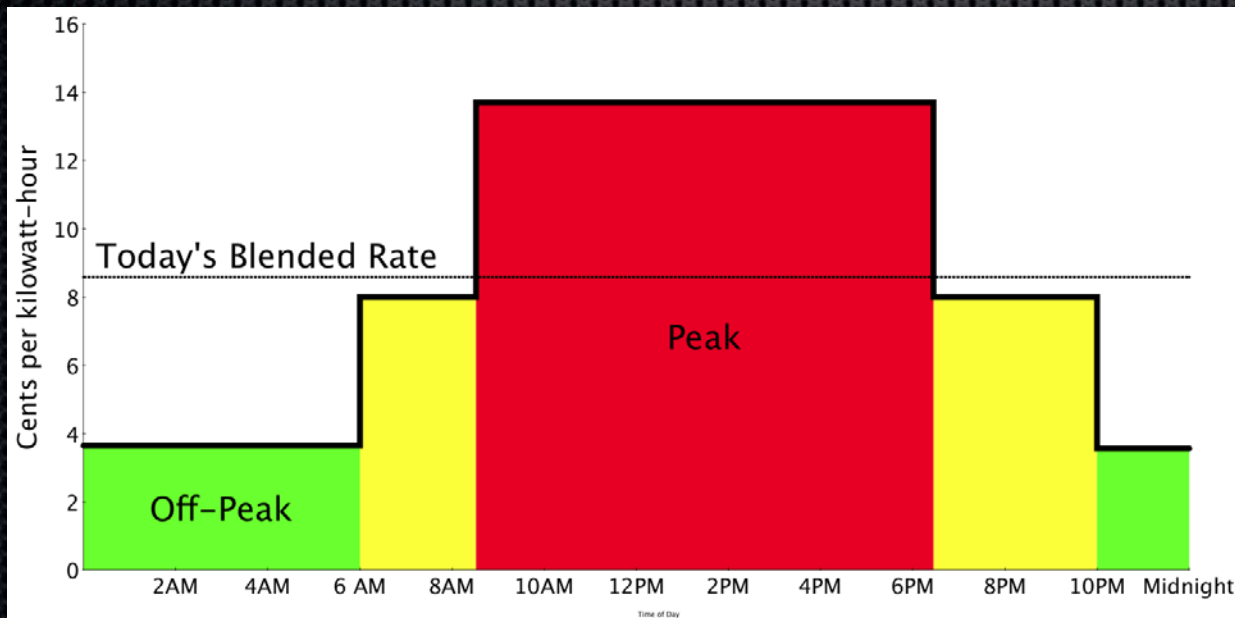
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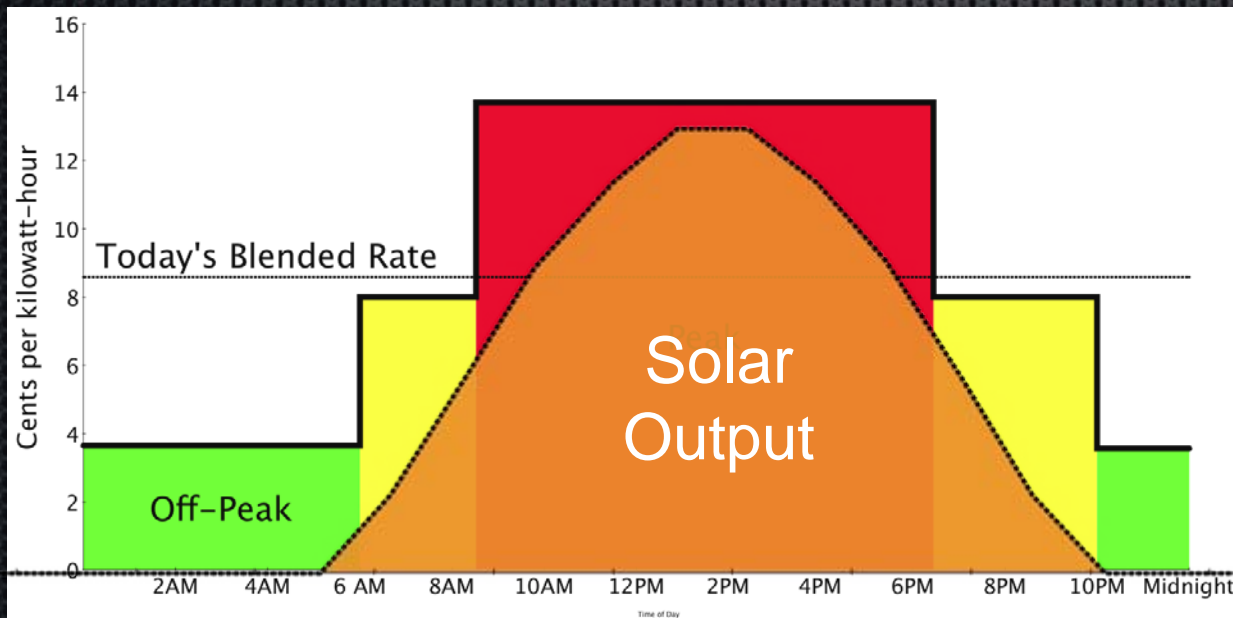


Photovoltaics More Valuable



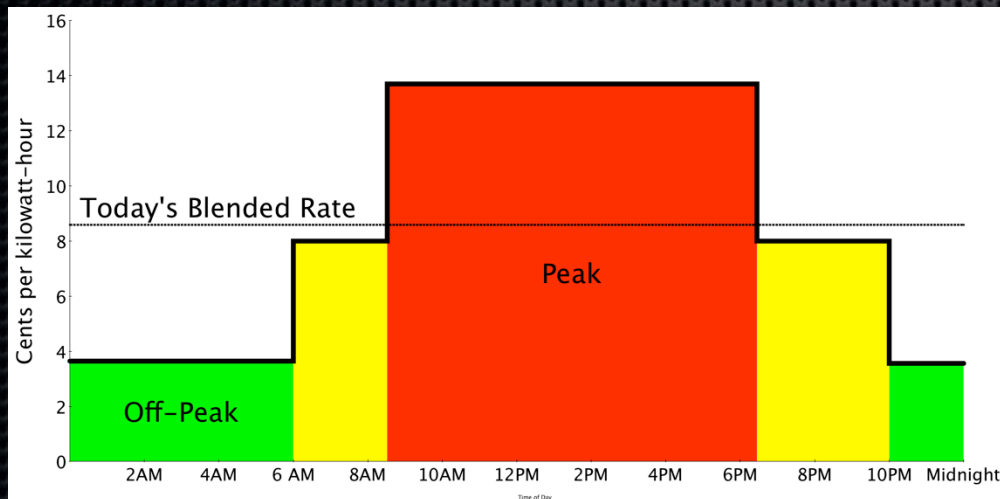


Photovoltaics More Valuable





Smarter Homes – can automatically use electricity when it is cheaper if it works with *your* schedule.





New Customer Options: Results

- Saving your petunias from the meter reader
- Manage energy use – gives engaged consumers access to more information about their usage.
- Lower cost electric vehicle charging
- Higher value solar photovoltaic systems
- Enabling new smart appliances and home devices to automatically save money
- New pricing options like the “Smart Energy Pioneer Rate”



The 3 Faces of Our Smart Grid



1. Ongoing Utility
Modernization



2. Local **Green Energy**



3. New Customer
Options

On to the focus group

Lynn and Rebecca

