

MODERN GRID STRATEGY

What is the Smart Grid?

FERC – NARUC Smart Grid Collaborative Meeting

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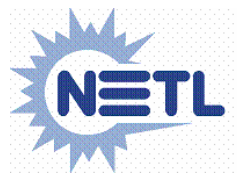
Today's topics

- **Smart Grid – the Enabler**
- **What is the Smart Grid?**
- **Some closing thoughts**
- **Questions**



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Smart Grid – the Enabler



Imagine a World with 200 million electric vehicles that:

- **Connect anywhere**
- **Provide transportation *and* act as storage and generators for the grid**

And are powered by:

- **Clean central station generation**
- **Renewables and other distributed generation**

A shift from gasoline to PHEVs could reduce U.S. petroleum imports by 52% (PNNL – *Impact assessment of PHEV's*)



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Providing consumer benefits

- Equivalent of \$1.00 per gallon for gasoline
- Opportunity to buy when KWh prices are low
- Opportunity to sell when KWh prices are high
- Home back-up power and mobile resource

Consumer involvement - a compelling value proposition is needed



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And substantial societal benefits

- **Dramatic reduction in tailpipe emissions**
- **Reduction in petroleum imports of >50%**
- **Reduction in peak loads – lowering prices for consumers**
- **Improved grid reliability – decreasing today’s consumer losses of >\$125 Billion annually**
- **Increased grid security – the “Fort Knox” model**

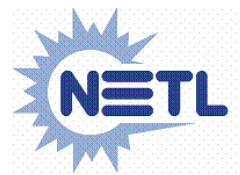
The Smart Grid can make this “world” real!



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What is the Smart Grid?



Smart Grid is Defined by its Characteristics

The Smart Grid will:

- Enable active participation by consumers
- Accommodate all generation and storage options
- Enable new products, services and markets
- Provide power quality for the digital economy
- Optimize asset utilization and operate efficiently
- Anticipate & respond to system disturbances (self-heal)
- Operate resiliently against attack and natural disaster



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Steps to the Smart Grid

AMI

AMI empowers the customer and establishes communications to the loads

Distribution (ADO)

ADO enables self healing

Transmission (ATO)

ATO addresses congestion

Asset Management (AAM)

AAM greatly improves the performance of today's asset management programs



Keeping the “End in Mind”

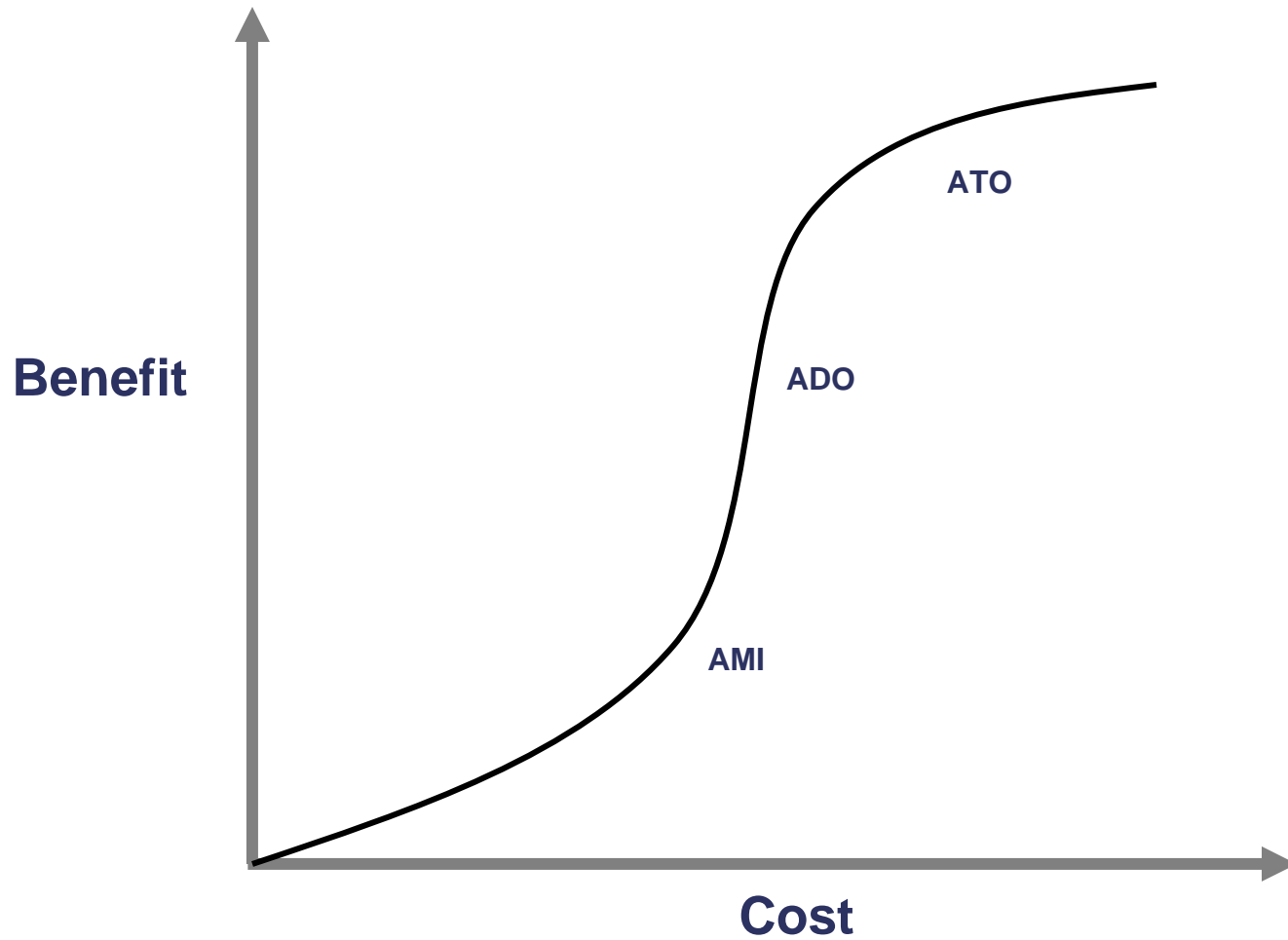
<i>Characteristic</i>	<i>AMI</i>	<i>ADO</i>	<i>ATO</i>	<i>AAM</i>
Enables Active Consumer Participation	✓	✓		
Accommodates All Generation & Storage Options	✓	✓	✓	
Enables New Products, Services and Markets	✓	✓	✓	
Provides PQ for Digital Economy	✓	✓	✓	✓
Optimizes Assets & Operates Efficiently	✓	✓	✓	✓
Anticipates and Responds to System Disturbances	✓	✓	✓	✓
Operates Resiliently Against Attack and Natural Disaster	✓	✓	✓	

Powering the 21st Century Economy



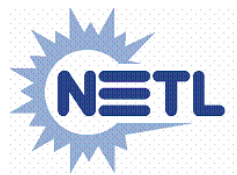
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Generally speaking...



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Some Closing Thoughts



Some closing thoughts

- **Communication of Smart Grid concepts and benefits should continue**
- **Consumer input, alignment, and support is essential**
- **Value of Smart Grid depends on consumer participation**
- **Value increases as progress is made towards the vision**
- **Sharing successes and “lessons learned” can leverage progress**
- **Supportive regulatory policies is an enabler**
- **Metrics will bring visibility to progress and results**



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Questions?



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