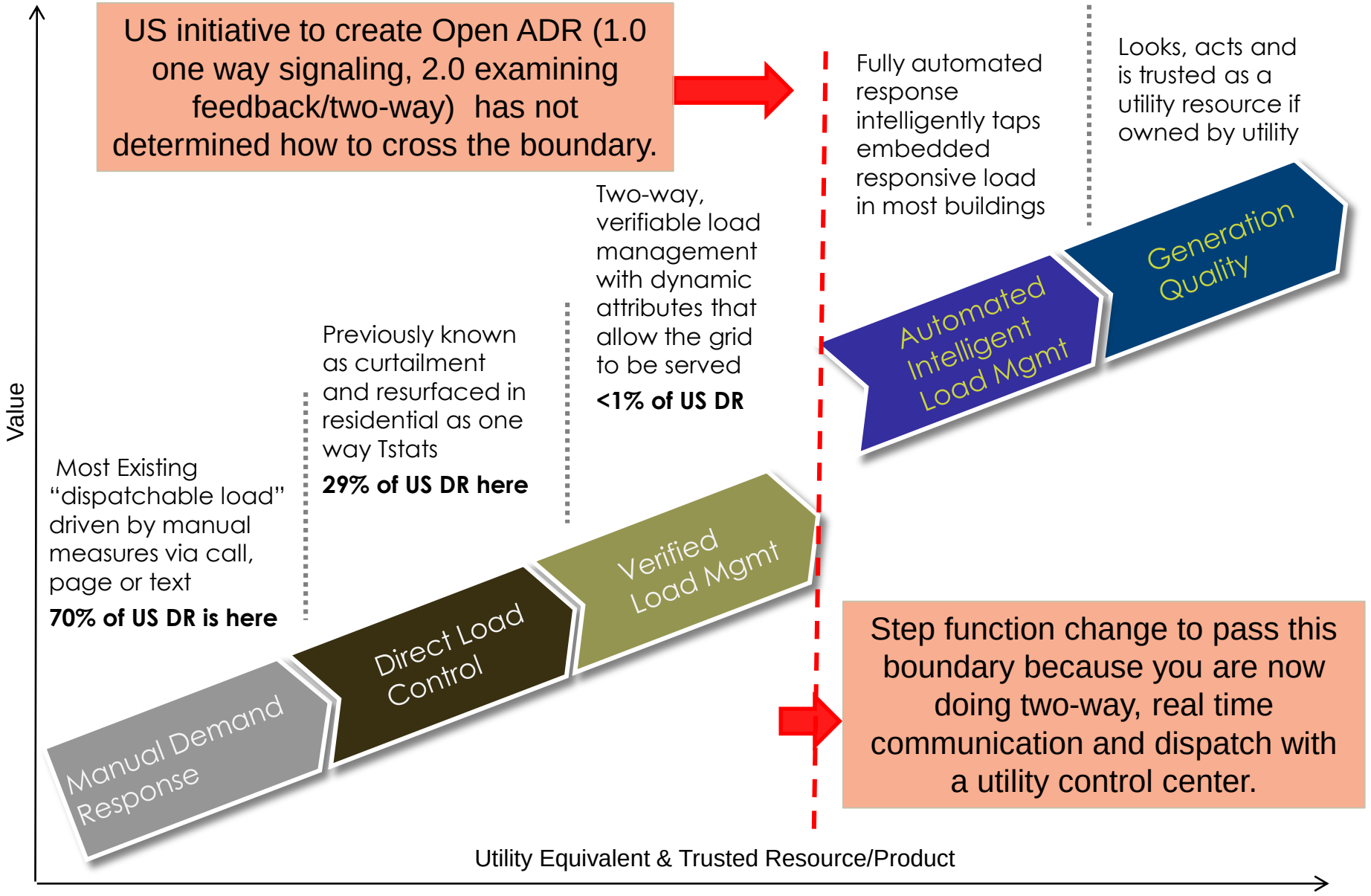
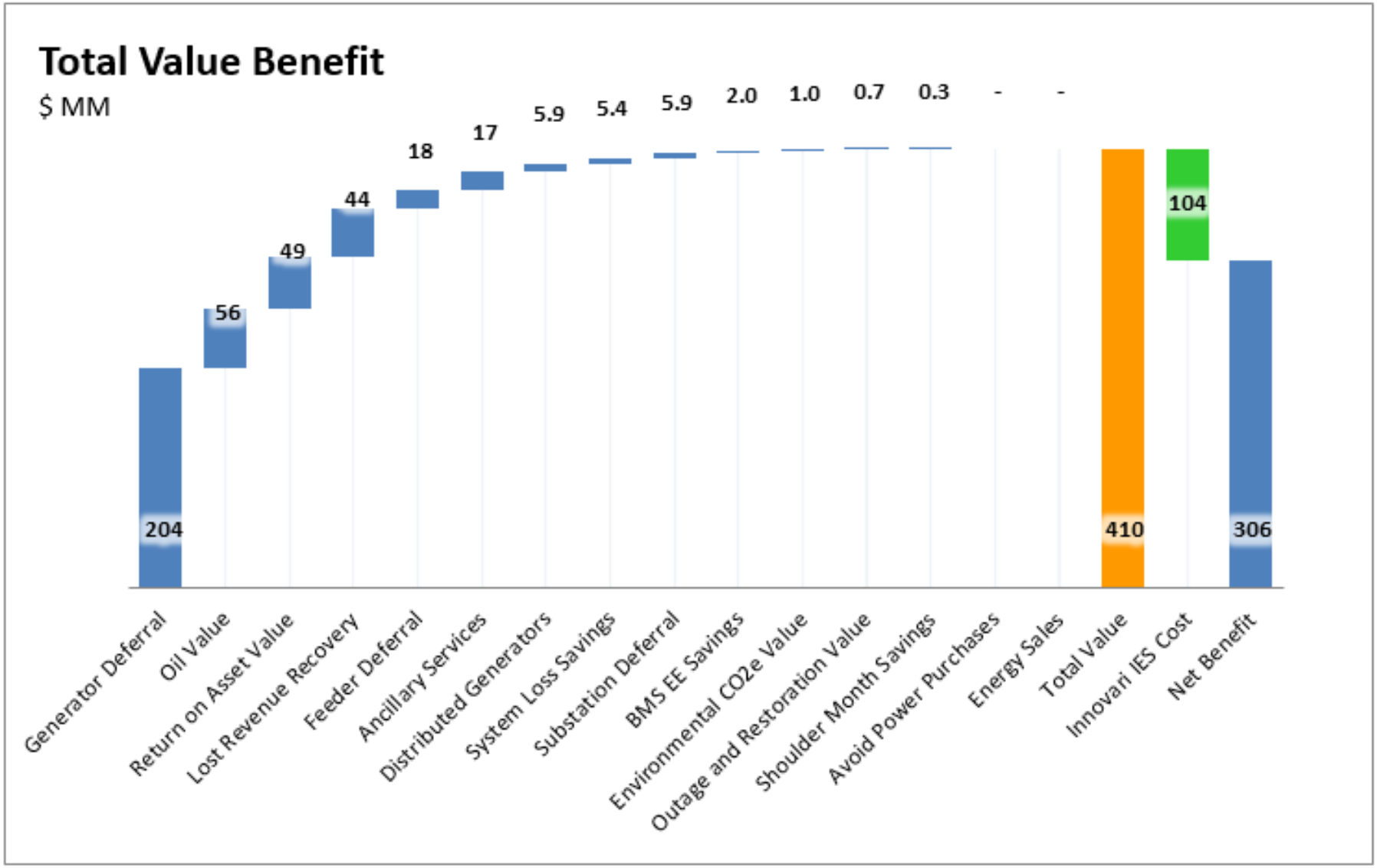
A NEW REGULATORY MODEL FOR AUTOMATED DEMAND SIDE MANAGEMENT

Consumers, regulators and utilities can all benefit

SUEDEEN G. KELLY
AKIN GUMP STRAUSS HAUER & FELD LLP


US initiative to create Open ADR (1.0 one way signaling, 2.0 examining feedback/two-way) has not determined how to cross the boundary.
Fully automated response intelligently taps embedded responsive load in most buildings
Looks, acts and is trusted as a utility resource if owned by utility
Two-way, verifiable load management with dynamic attributes that allow the grid to be served
<1% of US DR
Previously known as curtailment and resurfaced in residential as one way Tstats
29% of US DR here
Most Existing "dispatchable load" driven by manual measures via call, page or text
70% of US DR is here
Automated Intelligent Load Mgmt
Generation Quality
Verified Load Mgmt
Direct Load Control
Manual Demand Response
Step function change to pass this boundary because you are now doing two-way, real time communication and dispatch with a utility control center.
Value
Utility Equivalent & Trusted Resource/Product

What's the real value of ADSM?



History: Learn from others what has and has not worked

In the U.S. and Europe, DR is still utilized almost exclusively for “Emergency” reasons only, not as a grid resource.

Most programs are even designed to operate for less than 80 hours/year and actually dispatched or called less than 20 hours each year.

ADSM needs to be a 400-450 hour/year resource and needs to be two-way and verifiable by Grid Operator in real-time. Not one way, not 80 hours.

In the U.S., great things have been accomplished:

- EE
- Deferral or Elimination of Peak Power Plants
- Emission Reductions
- Full deployment of SCADA
- AMI/AMR

But the net result related to the Root Cause Problem of our Industry?

The Root Cause Problem of the System Load Duration Curve is **WORSE**.

The grid has become more ‘peaky’ driving even greater economic issues and price separation from peak to baseload. Utilities have not been given control.

FIRST – Define the goal for ADSM

Define and approve regulatory structures that provide a 'regulatory equivalent' treatment for investment on the demand side to align the objectives for the customer, utility and regulator.

Ensure KPI's measure system effects, not programmatic results.

Traditional DSM Models
Regulatory Economic Implications

Traditional DSM or DR program structures

- No physical assets
- Programmatic expenses are created
- Execution of DSM events creates kWh reduction, which erodes revenue
- Customer interaction typically owned by vendor, creates conflict to regulator and utility
- Not treated as a ‘regulatory equivalent’ to other options such as a peaking power plant

Result:

The typical regulatory-or legislation-mandated DSM program creates new expenses while reducing revenue. No asset is created to be included in rate base. The utility’s customer relationships are transferred to a vendor. The utility must manage a programmatic pass-through expense with negative revenue implications and negative customer impacts. Customer complaints to regulators increase.

Asset Based Approach for DSM Regulatory Economic Implications

- DSM provides system optimization and reliability. The DSM equipment can be recognized as a plant-in-service asset
- Designed to enhance the utility's relationship with their customer, potential to add value to the customer through incentive, tariff or other methods
- Designed to work within existing regulatory framework to simplify requirements for program creation and enhance support of regulatory goals for electrification of Indian Power Sector
- Designed to enable a truly equivalent resource for the utility to choose
- Designed to improve the overall GDP of a country through efficient, effective, reliable and low cost supply of electricity

Result:

Assets are installed that the utility can add to rate base and earn on. Utility relationships with key commercial and industrial customers can be improved. Regulatory framework exists today so can get started quickly and create value for every stakeholder in the energy value chain. True Win-Win-Win model for Utility-Customer-Regulator.

Asset Based Approach for DSM
Recommended Regulatory Framework Outline

Partnership approach with regulators to define a successful model for ADSM. Develop a Common Framework for scale implementation.

Step 1: Allow the asset to be placed into rate base.

Step 2: Define regulatory treatment for the programmatic/recurring cost of the program and customer incentives.

Step 3: Define regulatory treatment for the lost revenue from reduced kWh due to DSM events and EE effects.

Step 4: Define the regulatory treatment/tracking for the environmental benefits associated with the kWh reductions for both EE and DSM. (White Tags)

Step 5: Define the regulatory treatment of fuel pass through mechanism for aggregation of customer owned distributed generation resources.

Concept: Use traditional Regulatory structures to implement. For each of these 5 steps, regulatory recovery mechanism already exist. Nothing new!

Example Effects of Implementation

Step 1: Allow the asset to be placed into rate base

RR = RB (ROR) + Exp

RR=Revenue Requirement

RB=Rate Base

ROR=Rate of Return

Exp=Expense

Rate Base Increase	Rate Base Decrease
ADSM Platform	Distribution Feeder Upgrade Deferral/Elimination
	Substation Upgrade Deferral/Elimination
	Peaking Power Plant Deferral/Elimination

Net Effect

Overall capital requirements for the business will be decreased and Rate Base will be slightly lower as the investments on the demand side are less costly than those on the supply side.

Example Effects of Implementation

Step 2: Define regulatory treatment for the programmatic/recurring cost of the program and customer incentives.

RR = RB (ROR) + Exp

Expense Increase	Expense Decrease
Opex for ADSM platform	Opex for Peaking Power Plant
Opex for Customer Incentives	Opex for Peaking Power Plant fuel

Net Effect

Overall expense requirements for the business move from volatile and variable costs of power plant operation and fuel to stable, fixed costs on the demand side that engage and improve relationships with customers. Overall expenses are less.

Example (cont)

Step 3: Define regulatory treatment for the lost revenue from reduced kWh due to DSM events and EE effects.

Method allows all stakeholders to recognize the value of a reduction in kWh equally as valuable as one produced from a generator and sold to a customer. Removes "Dis-incentive" for utility by allowing the reduced kWh from dispatched ADSM events to be recovered instead of being an expense that erodes the utility revenue stream.

dkWh=dispatched generation kWh + dispatched ADSM kWh

dkWh = total dispatched kWh

Utility Avg $/kWh = (RB(ROR) + Exp) / dkWh

As with a power plants produced kWh, ADSM kWh is now recovered fairly across all utility customers.

Net Effect: De minimis effect in total

Example (cont)

Step 4: Define the regulatory treatment/tracking for the environmental benefits associated with the kWh reductions for both EE and DSM. (White Tags)

dkWh tracked and measured. Total dkWh leads to a defined carbon equivalent reduction based on the fuel mix of the region.

Additionally possibility to include positive environmental effects of the deferral and/or elimination of additional fossil fired peaking power plants.

Net Effect

Significant Carbon Equivalent reductions identified to help meet sustainability goals with no incremental expense for the tracking and certification mechanism.

Example (cont)

Step 5: Define the regulatory treatment of fuel pass through mechanism for aggregation of customer owned distributed generation resources.

Engage resources that have been invested in by customers and make them an active and positive part of the grid optimization.

Rate Base Increase	Rate Base Decrease
Synchronous Interconnection Switchgear	Peaking Power Plant Deferral/Elimination

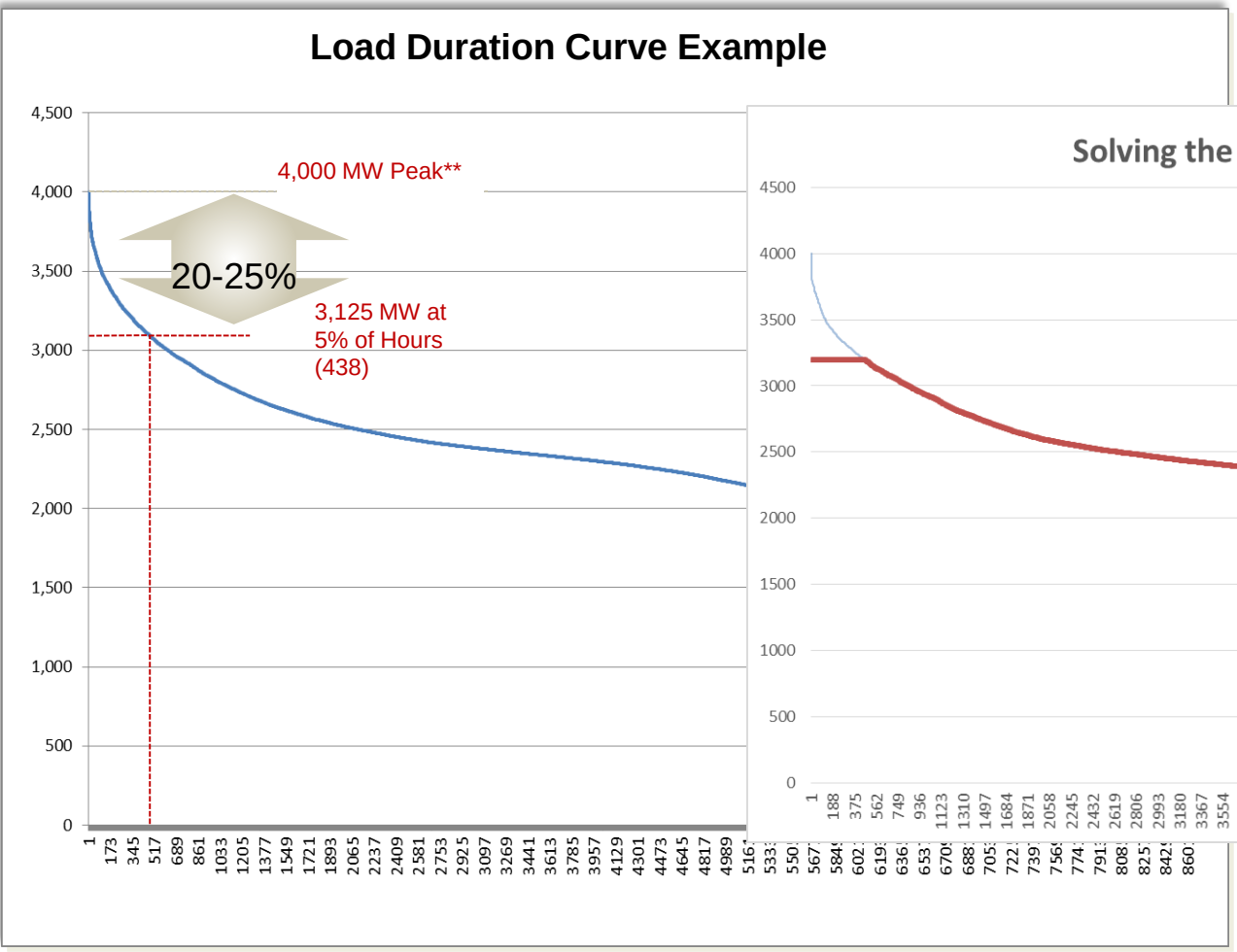
Expense Increase	Expense Decrease
Opex for maintenance share	Opex for Peaking Power Plant
Opex for fuel	Opex for Peaking Power Plant fuel

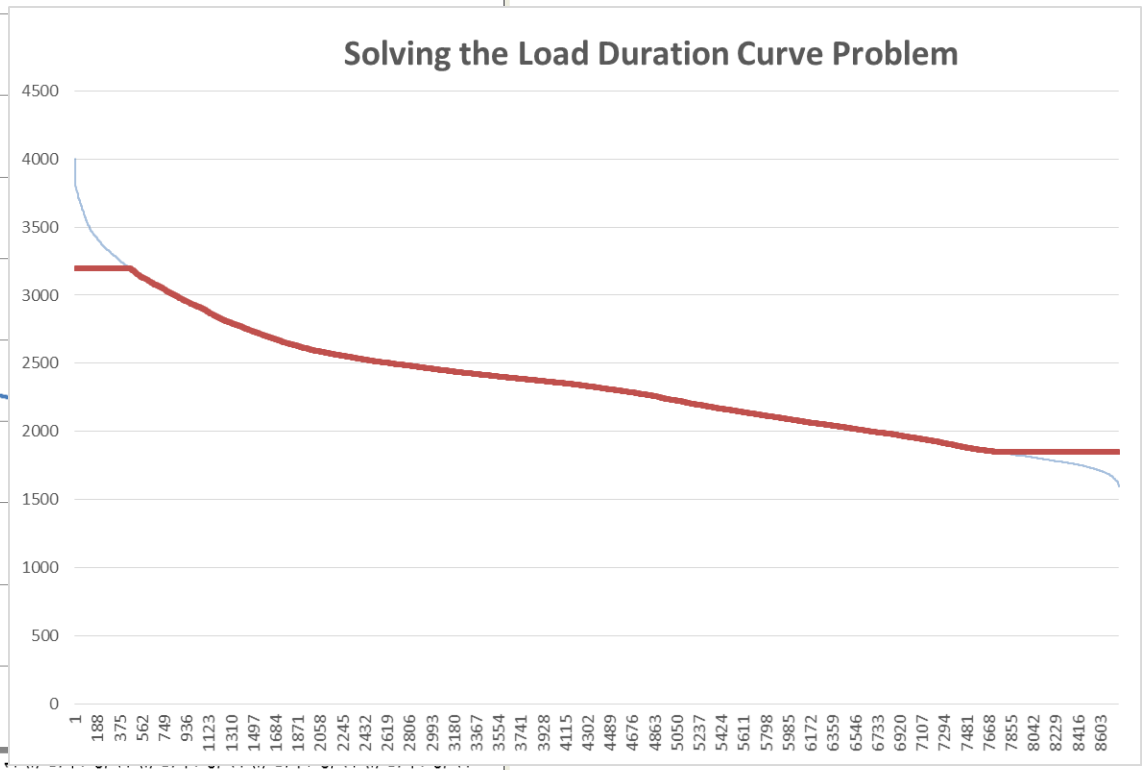
Net Effect

Overall expense requirements for the business neutral. Significant grid reliability/stability improvement and customer satisfaction through partnership of shared operation/fuel to help manage their expense in exchange for grid support.

Ensure ADSM designed to attack **400-450** hours/year of the LDC

Create Automated & Dispatchable DSM that can be trusted and relied upon grid operators to effectively manage and optimize their system.





ADSM + Akin Gump Model Outcomes

- Lower kWh charge (cost recovery based on dispatch)
- Distribution Company intimately tied to the customer
  - Future opportunities large and potentially available
  - Lower disintermediation possibility
- Distribution total cost is lower and more reliable
  - Outcomes aligned with Regulator's interests
  - Outcomes aligned with Customer's interests
- Total Utility Rate Base slightly lower (ADSM vs. Peaking Power Plant investment and deferral/elimination of upgrades)
  - Cash freed up for alternative investments
- Platform created to help enable and accept a wide variety of current, and future, edge grid technologies
- Mitigate or Mute Peak vs Off Peak Cost/Price by flattening the Load Duration Curve

Summary

- You are now uniquely positioned to leapfrog existing DSM/DER paradigms in markets like the US and Europe.
- Opportunity to utilize Automated and Dispatchable DSM for 'Peaking Power' for total system utilization and reliability and enabling renewables. Improving the performance of the wires business while helping meet state and national goals for sustainability and system optimization.
- Bringing the consumer, the regulator and the utility together creates a powerful partnership to drive the overall performance of your grid
- These initiatives will fail if the utility, consumer and regulatory goals are not aligned. Regulatory equivalent treatment for demand side investments must be achieved for utilities to embrace these programs and the investments necessary to make them part of their standard planning and operating practices.
- KPI's must measure and be correlated to system impact, not programmatic enrollment or programmatic measures.

THANK YOU!

QUESTIONS?