

Changing the Strategic Perspective on the Value of DR



BRIDGE Energy Group

BRIDGE Energy Group delivers the technology and domain expertise to transform ...

- Business operations
- Regulatory approach
- IT operations
- OT operations

Improvements include benefits in ...

- Operational efficiency
- Customer services
- Grid reliability (outages)
- Environment

Specialization: Electric Transmission & Distribution

Headquarters: Marlborough, MA

Established: 2004

Financials: Growing and Profitable
Updata Partners Portfolio Company

Solutions: Smart Grid strategy, solutions,
expert services and products

Differentiation: Domain, Technology and Regulatory
expertise, Authored multiple
standards, vendor agnostic

Back To Basics: “DR is Good!”

The most important benefit of demand response is improved resource-efficiency of electricity production due to closer alignment between customers’ electricity prices and the value they place on electricity.

- Participant financial benefits: bill savings and incentive payments earned by customers that adjust their electricity demand in response to time-varying electricity rates or incentive-based programs.
- Market-wide financial benefits: lower wholesale market prices that precipitate from demand response averts the need to use (or even develop) the most costly-to-run power plants during periods of otherwise high demand
- Reliability benefits: operational security and adequacy savings that emerge because DR lowers the likelihood and consequences of forced outages that impose financial costs and inconvenience
- Market performance benefits: value in mitigating suppliers’ risk in ability to exercise. Also, financial and physical arbitrage opportunities

“We Need More...”

- Fostering Price-Based Demand Response
- Improving Incentive-Based Demand Response
- Strengthening Demand Response Analysis and Valuation
- Adopting Enabling Technologies
- Integrating Demand Response into Resource Planning

DR Trouble in Paradise: Market Problems

The energy industry has been colonized by “derivative thinkers.” New technologies in generation, transmission and distribution including the Smart Grid bring power to markets for players including the wholesale market makers and participant who bring the power of option-pricing perspectives to create new contracts and markets for the exchange of assets including DR assets, mobile load assets, etc.

However, market innovations blur the lines between real and financial assets, catalyzing questions of fairness and incentives.

The Cure: Provide the right signals and incentives to the right players...

The Real Options, Option

- Investment in Smart Grid and subsequent changes to energy markets including time of use pricing, which aims at an increase in economic efficiency, is a process that generates various risks and uncertainties that accrue asymmetrically across the ecosystem of actors and entities within the energy sector.
- As the level of risk and uncertainty increases, traditional deterministic methods of economic modeling (DCF) and other approaches used for capacity investment planning, transmission planning, and for ratemaking and that heavily influence demand response investment and planning need to be complemented by other, more sophisticated methods, in order to deal with the potential fluctuations in both demand and price trajectories of electricity.
- The real options (RO) approach to investment decision planning and Demand Response provides an attractive opportunity to evaluate investment alternatives in market structures, capacity investment, market operation and customer pricing in a deregulated (if unevenly deregulated) environment.

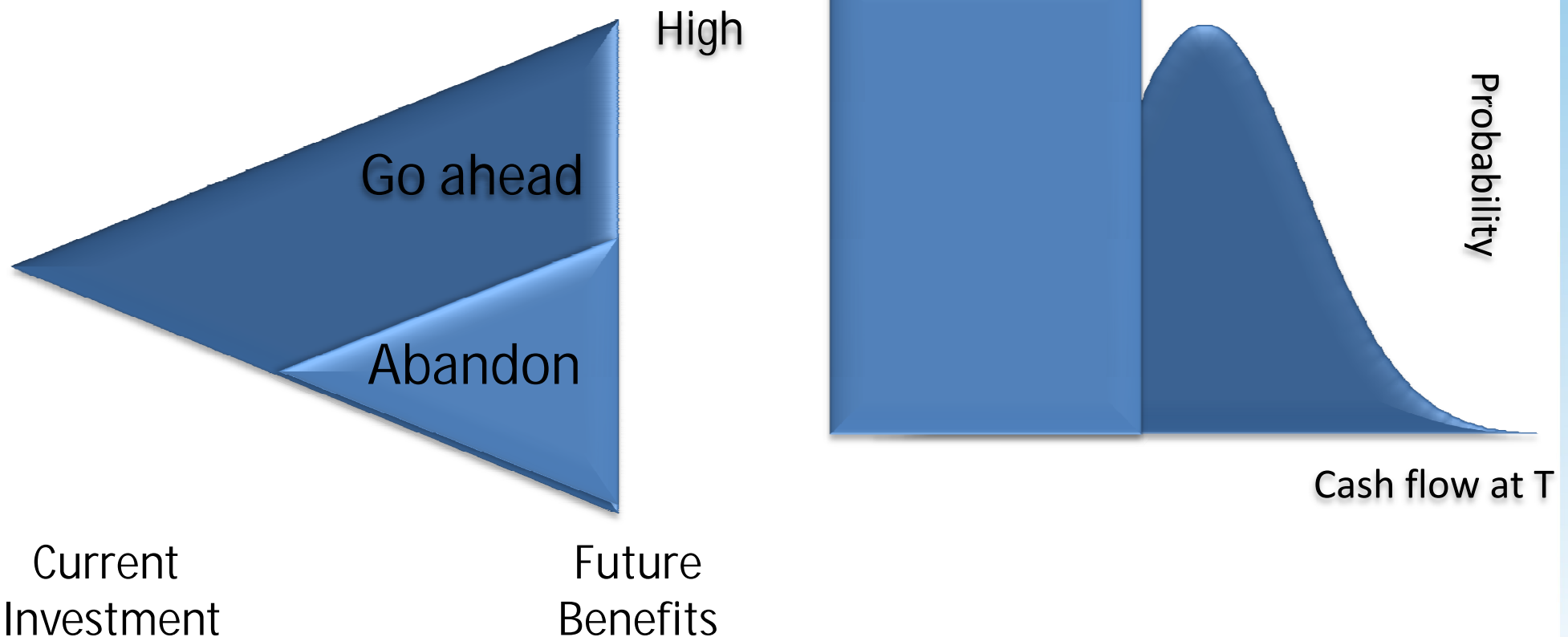
Real Options – Applied Holistically

- Adopted from finance
- Seeks gains from deferring an irreversible investment expenditure (vs. traditional “now or never” proposition).
- Works well with non-standard constraints specific to the electricity sector
 - e.g. time-variant price elasticities of energy demand, non-linear cost structures, mismatch between cost accrual and benefit accrual and technology deployment lead times)
- Formulation of customized models for demand response options, can provide the right incentives to all

Options: Fairness & Protection

Conceptual Big Deal

- Can make load uncertainty work for market efficiency;
- As some uncertainty resolves over time (DR prevalence, maturity of mobile loads, transitional loads)
- If markets have flexibility to revise investment and/or DR operating decisions in response to new information
- Allows DR valuations to be “disciplined” by markets

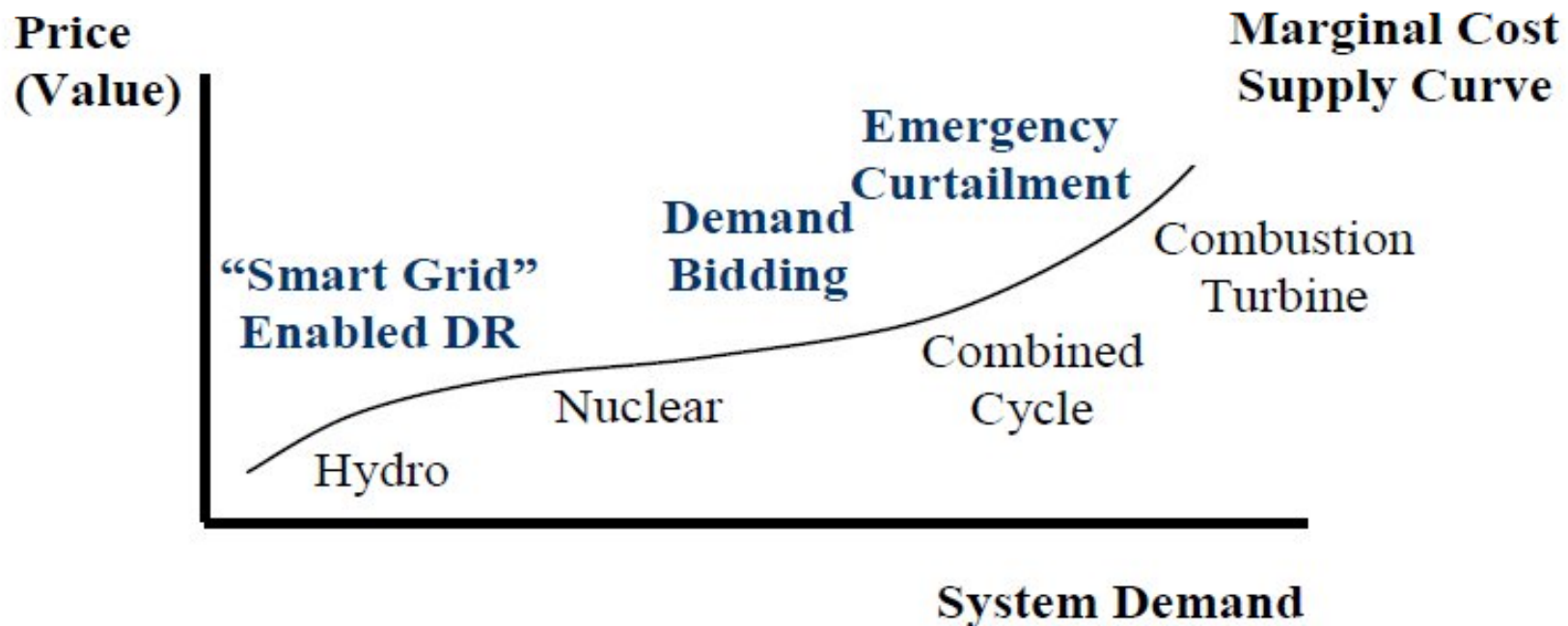




Driving to Grid 2020

DR as a Resource: Composite Options

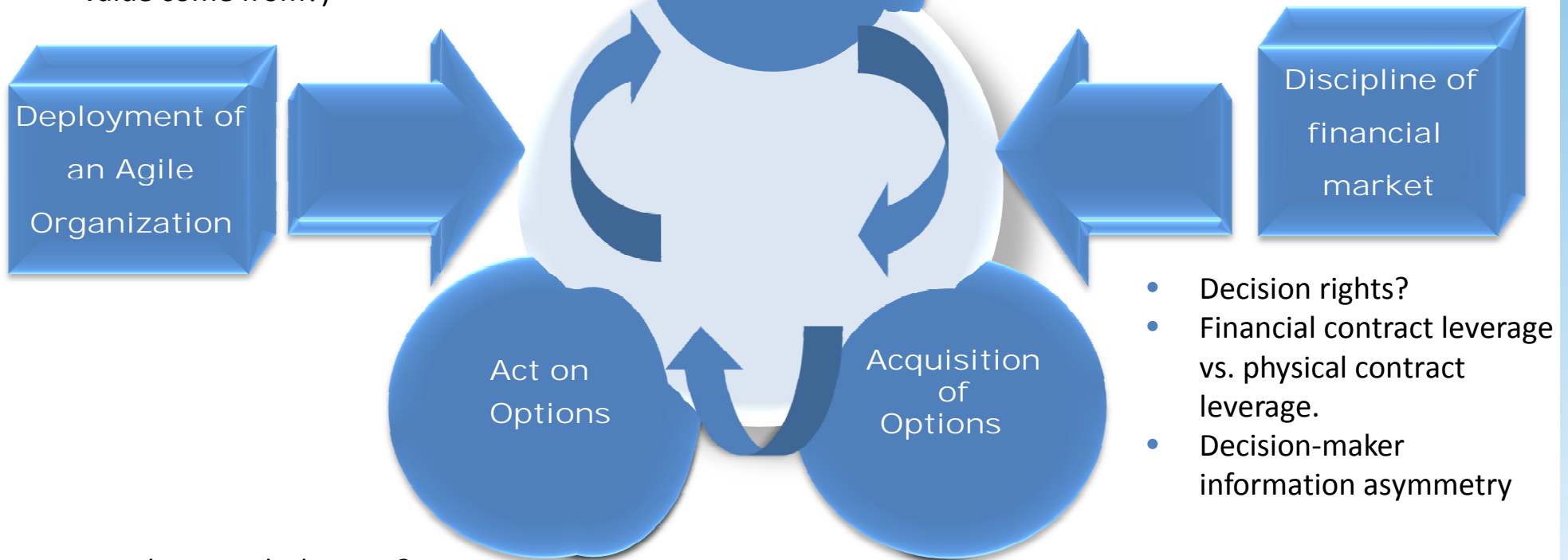
Demand programs are better valued using the methods and tools of the supply-side commodity markets rather than the traditional demand-side Standard Practice Manual tests. Real Options approaches for valuing the extrinsic or insurance value of demand response programs as an add-on to the standard practice manual benefit calculations. yields keen insight and opportunity. (DR Comparisons to unique fossil fuels, etc.)



Navigating Real Options

- Bias of advocate ≤ be reduced
- What relevant information is available?
- Is this real option answer credible? (A credibility check: Where does value come from?)

- What is the risk
- Can the risk profile be improved by changing the terms of the contract?



- Are they worth the cost?
- What is the best way to create and acquire options?
- Do you have the organization to manage options over time and to realize the full potential value?

- Decision rights?
- Financial contract leverage vs. physical contract leverage.
- Decision-maker information asymmetry



Thank You

Contact Information

Ethan L. Cohen

ecohen@bridgeenergygroup.com

Toll Free: 1.888.351.8999

Main: 1.508.281.7133

info@BridgeEnergyGroup.com

www.BridgeEnergyGroup.com



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