



**NY Power
Authority**

Advanced Grid Innovation Laboratory for Energy

New York Power Authority
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October 8th, 2015
BNL's Smart Grid Workshop

Objectives for today

- AGILe's Conceptual Evolution
- Recent Development Activities
- AGILe vision
- Executing on the Vision – Next Steps

REV is driving complex changes in the energy market creating a need for an innovation center

REV is driving complex changes in the overall energy market...

- REV is an **ambitious and complex order**
 - Requires significant technology change to **enable at scale bi-directional power flow** and a **new distribution market** design and platform
 - **Numerous stakeholders** are involved
 - There is an **aggressive timeline** for stakeholders to respond
- **Numerous working groups and parties** are working to respond to REV
 - **Utilities are each individually working** to file demonstration projects and plans for the creation of DSIPs
 - There are **numerous working groups** (e.g., Market Design and Technology Platform) working to facilitate industry discussions
 - **GridTech companies** are independently trying to figure out how to configure their technologies to participate and succeed in the market

...that has created the need for a new collaborative innovation center

- **Collaborative facility** that can efficiently bring stakeholders together - including grid operators, Grid Tech companies, and world class researchers
- Provide **testing, analysis, modeling of technologies and market design choices** to cost effectively facilitate and inform all stakeholders and avoid jeopardizing grid stability

We spoke to labs, utilities, and grid techs/OEMs

University labs outside of New York



Other labs



Lab consortiums



Federal labs



Utilities



University labs in New York



Utility-run labs



Grid techs/OEMs



We have heard from New York utilities that there are numerous challenges presented by REV where they need support...

Market challenges

“In reality, there’s not a marginal distribution value that’s fixed; it’s a marginal distribution value that through time and space will change. But how do we solve for that?”

“Absolutely, that is the Holy Grail of REV, being able to have temporal and locational marginal pricing”

Technical challenges

“Standards are the biggest challenge with REV. Standards for solar ratings, standards for DG interconnection. Standards with connectivity and protocols”

“We need new modeling tools and capabilities to model the distribution grid. How do I do it? I don’t know it and that’s the biggest angst at the moment”

Business model challenges

“NY doesn’t want six different models. Collaboration would be encouraged. The PSC has asked us to collaborate.”

“AGILE can be a precursor step to weed things out we don’t need a field test for and expedite things past the field test site. In that way, we can save some money and avoid some risks .”

... and we also spoke with Grid Tech companies who highlighted similar challenges

Market challenges

“Forecasting will be a big challenge. How do we forecast? New demand, gross demand?”

“The problem we’re trying to solve is the balance of how these assets are used for reliability purposes and how they’re used for market purposes. There has to be some agreement between these systems”

Technical challenges

“How do distributed resources get managed and balanced? There needs to be visibility, control, and understanding at the feeder and beyond.”

“Technology problems are due to uncertainty over energy devices.”

“The industry is grappling with a new economic market model as it tries to make customer owned assets available for grid use”

“REV and new DERs raise the question, ‘What is the relationship with NYISO, the T&D interface?’

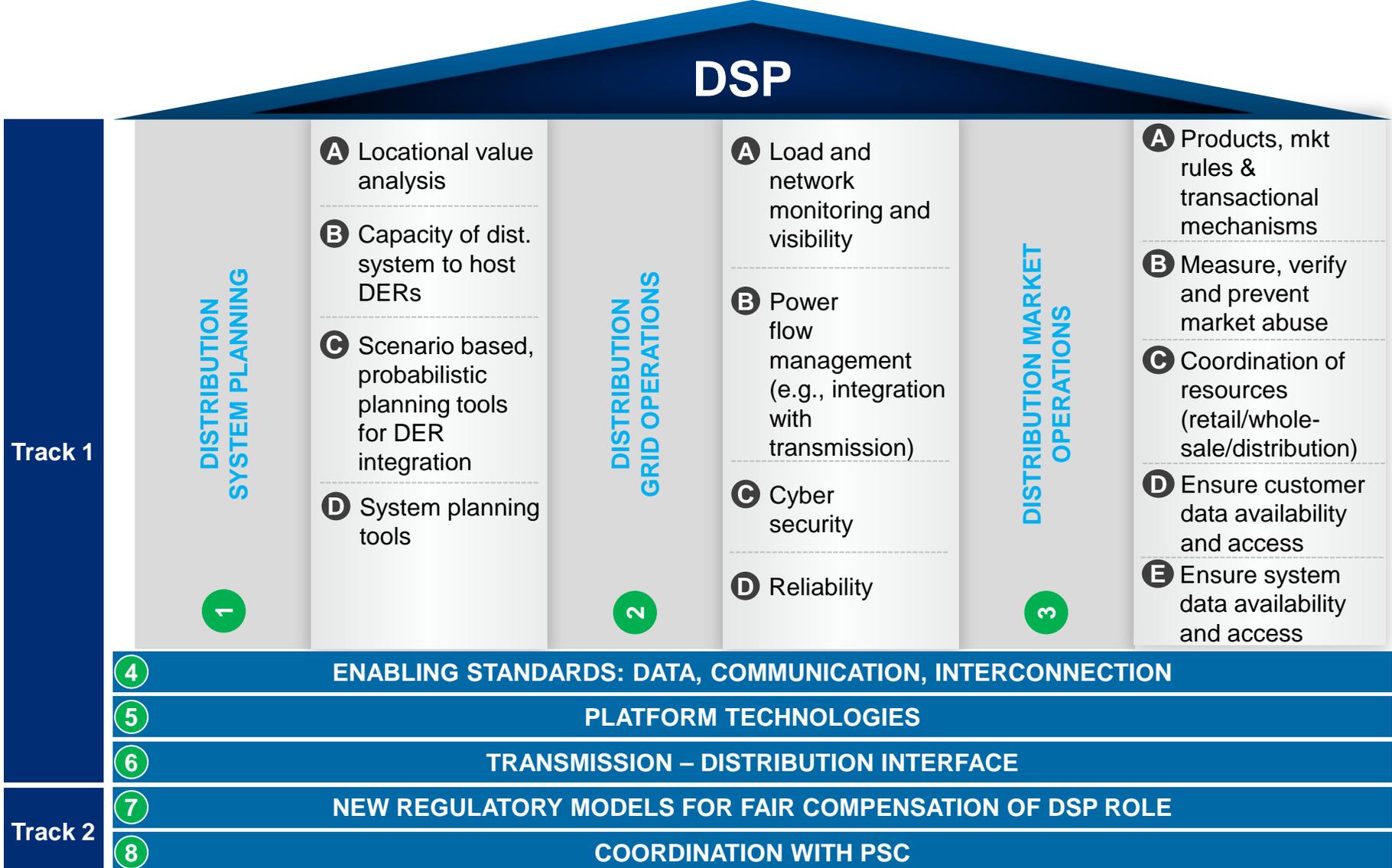
Business model challenges

“A multidisciplinary approach is needed for this: the PSC, the business community (utilities and third parties, technology providers – “coordination across the ecosystem”

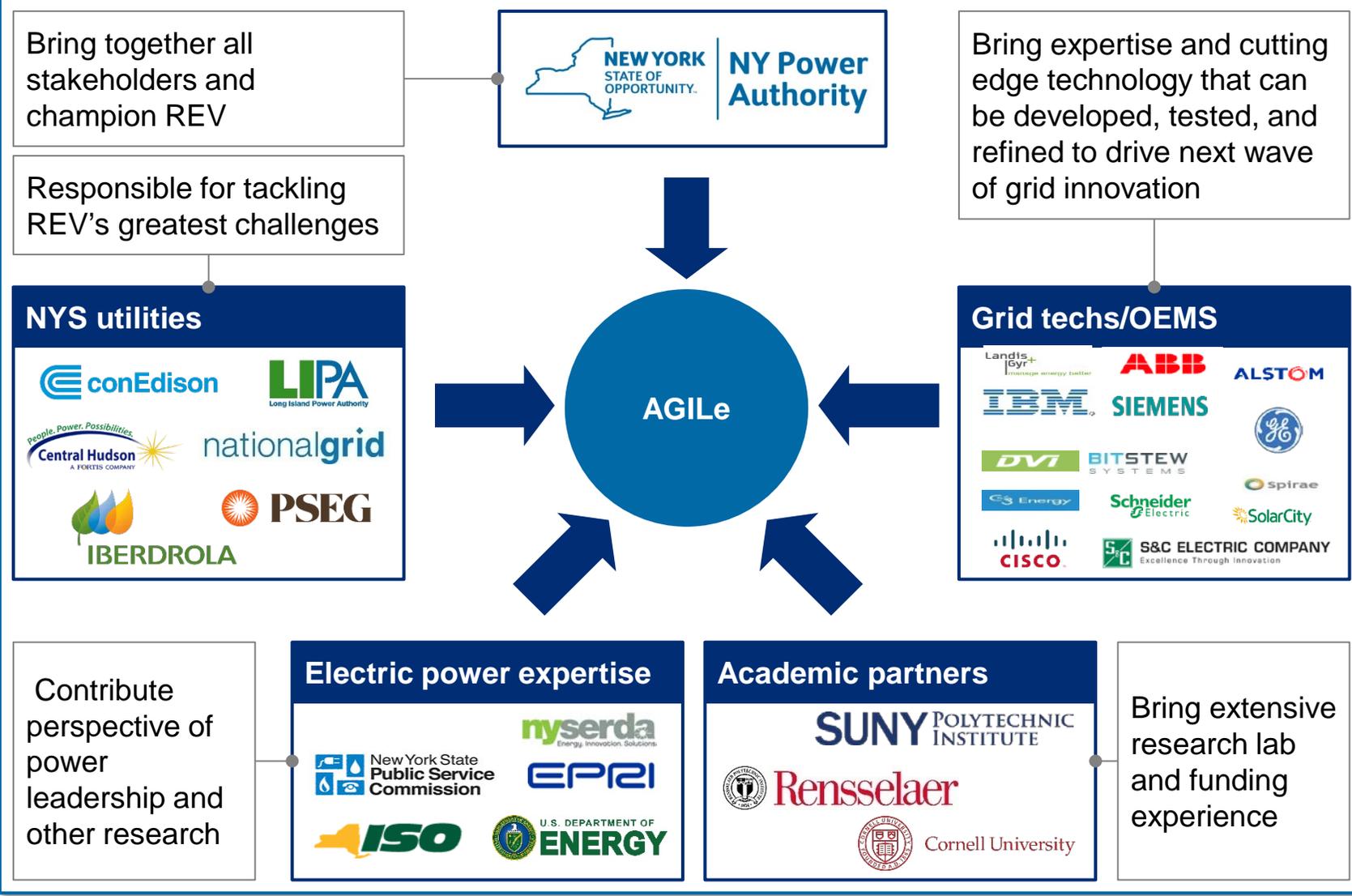
REV presents challenges across three major areas

- Solving technical challenges of high Distributed Energy Resources (DER) penetration and distribution-level control
- Designing and animating markets to drive adoption of Distributed Energy Resources (DERs)
- Identifying ways in which the Distributed System Platform (DSP) can receive Market Based Earnings (MBE) to support the DSP business model and long term utility sustainability

The updated REV house is the basis for the strategic vision



AGILE will have a unique model that brings many partners together



AGILE will have capabilities that allow for joint development of solutions to market and technical challenges

	<u>Description</u>
Technical capability	<ul style="list-style-type: none">▪ Real time power grid simulation tools and expertise to model current and future grid states
Market modeling	<ul style="list-style-type: none">▪ Modeling capability and expertise to understand and model market design proposals
Collaboration facility	<ul style="list-style-type: none">▪ Collaborative facility for NYS stakeholders to work together to solve challenges using grid system models and data



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Questions

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