

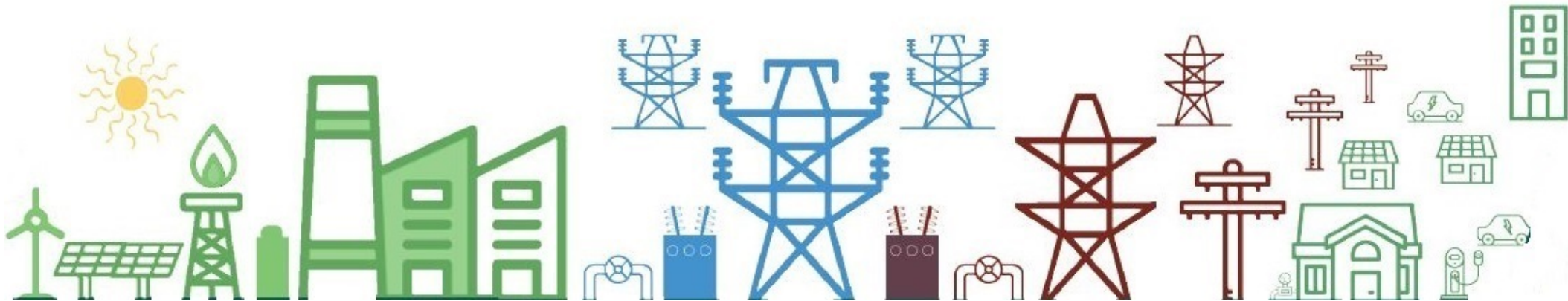
AMI Roundtable – Bogotá, Colombia – June 12, 2012

Ministerio de Minas y Energía, GOC Working Group for Integration of Variable Renewable Energy, USAID, USEA, NREL

Practitioner Perspectives on Key AMI Issues

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Berkshire Hathaway Energy - NV Energy



¿Quiénes SOMOS?

Facilitamos esquemas de eficiencia energética, y la respuesta de la demanda....

Practitioners from energy utilities, solution providers, and trade allies share expertise in demand response (DR) and distributed energy resources (DER).

Facilitamos la incorporación de tecnología de autogeneración, DER y VE....

- Over 140 member companies
- Conferences and Webcasts
- Networking and Industry Partnerships
- Training and Publications

Interest Groups help members exchange lessons learned.

- DER Integration
- Connected Devices
- Women in Demand Management
- Customer Engagement
- Retail Pricing
- International

(newest interest group with members from Japan, UK, France, Canada, and Ireland)

Facilitamos modelos de tarificación y canastas de tarifas....



Discussion Framework

AMI Policy Goals

- promote competition and innovation to drive:
- cost reductions
 - efficient consumption
 - new business models
 - sustainability

Regulation

- achieve policy goals via incentive alignment across stakeholders

★ opportunities for better alignment

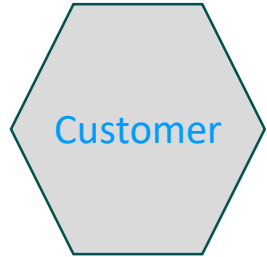
<p>Customer Engagement (Tariffs, Programs, Services)</p>	<p>Financial Valuation</p>
<p>Business Model</p>	<p>Metering Points (DER Integration)</p>
<p>Data Access</p>	<p>AMI Network Support</p>

Perspectives

- Distribution Utility
- Retail Energy Provider
- Energy Services Provider
- Market Operators
- Customers

Customer Engagement (Tariffs, Programs, Services)

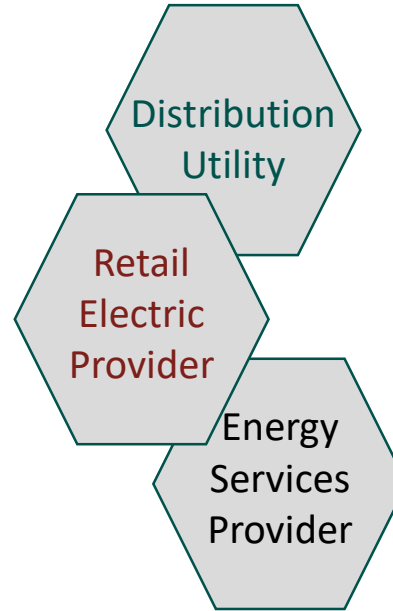
Los usuarios deberán acogerse a los planes de implementación aprobados para los OR



- ➔ AMI can be considered customer intrusive with respect to:
 - Health
 - Safety
 - Data privacy
 - Equity
- ➔ Customer understanding varies by type.
- ➔ Smaller customers may lack appropriate tools and/or understanding to take advantage of dynamic rates.



- ➔ Which aggregated customer-side services can compete in the wholesale market?



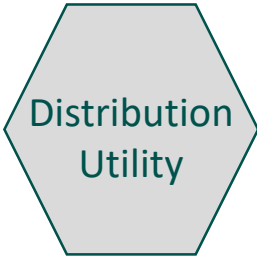
- ➔ AMI implementation requires a robust customer engagement plan.
- ➔ Which tariffs should be default or mandatory?
- ➔ What is my role in supporting electric load shaping objectives vis a vis the customer?

★ Clear market rules and role definition across actors

★ Consumer education responsibilities

Business Model

...generar nuevos modelos de negocio y servicios



- ➔ How are my revenue and earnings impacted by lower consumption and demand, when:
 - new dynamic tariffs are in place
 - DERs and self-generators are exporting power

- ➔ Which types of emerging DERs am I allowed to own and invest in?

- ➔ What is my incentive to invest in or facilitate energy efficiency, DR, and DERs?

- ➔ On the regulated side, revenue neutral ratemaking that doesn't appropriately adjust for successfully changing consumption patterns could present issues with adequate cost recovery of investments.

Examples of regulatory reform efforts:

- *New York REV (reforming the energy vision)*
- *States requiring Distributed Resource Plans such as California and Nevada.*

★ Distribution as a multi-sided platform may require new fee structures and performance based incentives that eliminate capital bias against policy objectives

Data Access

...para el acceso a la información de la AMI por parte de otros agentes...

Retail
Electric
Provider

➔ Pace of innovation and new business model development can be impeded via business processes used to implement privacy safeguards that make it difficult for agents to obtain data.

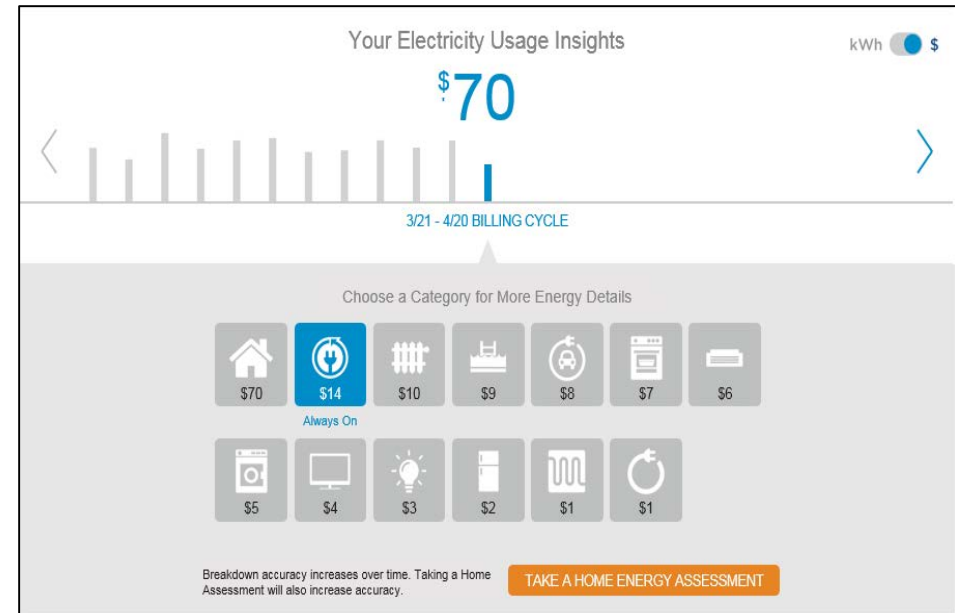
Energy
Services
Provider

➔ Data access frequency and smart meter interval lengths could limit AMI support of advanced technology applications developed by third parties.

★ Ownership structure of data portals and performance metrics targets could facilitate data access

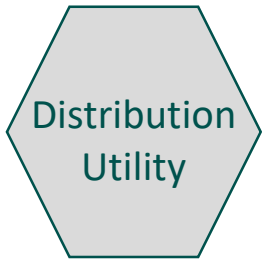
Examples of Data Access Schemes with low utilization:

- *Smart Meter Texas Portal*
- *Green Button (volunteer)*



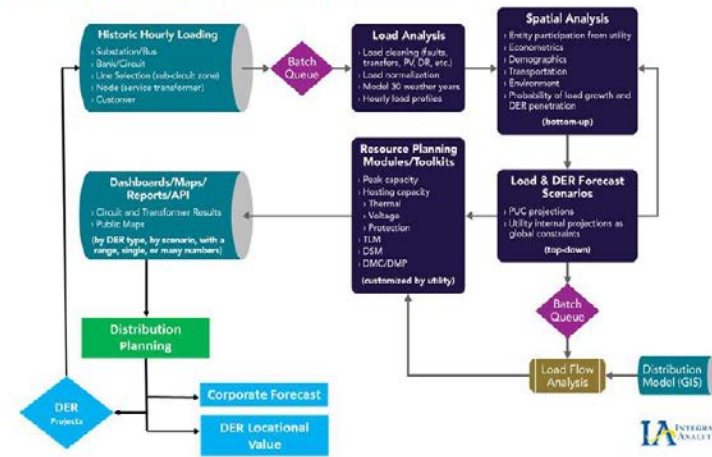
Financial Valuation

Adoptará los ajustes regulatorios con el fin de remunerar mediante la tarifa del servicio...



- ➔ Operational benefits alone may not justify AMI business case.
- ➔ Avoided cost benefits are more difficult to measure and successful achievement depends upon customers and other agents.
- ➔ Non-energy benefits are controversial.
- ➔ Insurance value of dispatchable DR often overlooked as well as other stochastic planning methods.
- ➔ Only certain types of EE and DR require AMI to be successful.

- ➔ Can I recover stranded costs of existing metering system?
- ➔ New methods are required for the determination of locational costs at the distribution level (i.e. distribution marginal cost).



Clarity and agreement on benefit quantification methods will greatly facilitate business case review

Metering Points (DER Integration)

Permitir la incorporación de autogeneración, almacenamiento, generation distribuida, y VE...

Scope of AMI metering points at a customer premise could include:

- *generation meter - to measure renewable production or other self-generation*
- *net-meter - to measure both energy received from and delivered to a customer premise*
- *storage meter – to measure both energy received from and delivered to a storage device*

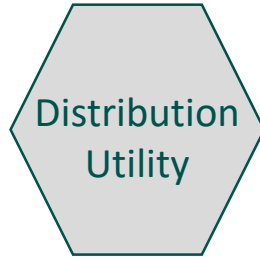
Scope depends upon tariff and grid services requirements that may be impacted by other incentive policies.

Many different meter form factors

AC & DC meters may be required for storage



- ➔ I need to install my own meters to enable inverter and other software optimization functions.
- ➔ I would like to monetize multiple revenue streams by selling cloud-based data, remote control, and grid service offerings to utilities.



- ➔ I need to install my own meters to prevent fraud and ensure accuracy of billing and settlement operations.
- ➔ I prefer not to have to pay or rely upon third parties for critical meter, inverter data, or remote control capability necessary to balance and operate the system.

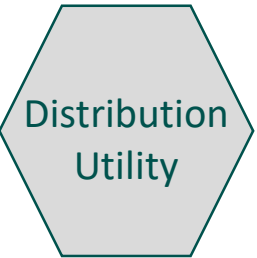
★ Customers could benefit from cost reductions if meter schemes could reduce redundant metering points

★ Independent or transparent data validation or auditing methods could increase trust across stakeholders

AMI Network Support

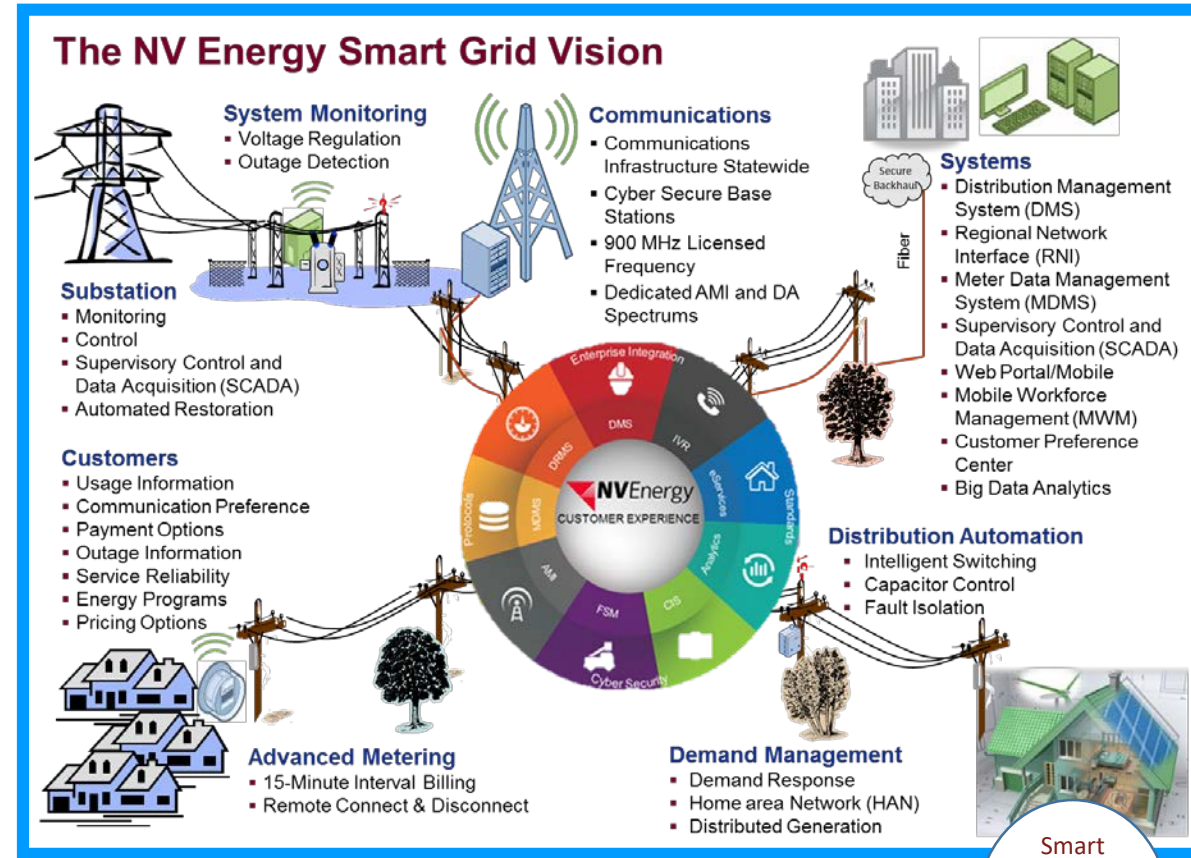
Mejorar la calidad del servicio a través del monitoreo y control de los sistemas de distribución.

Early AMI deployments in US had a heavy focus on operational benefits, dynamic pricing, and HAN. Many networks cannot well support ancillary services markets or the needs of near real-time operations on the distribution system.



- ➔ Bandwidth & Latency should support a big data ecosystem with the high velocity data transactions and optimization required accommodate DERs.
- ➔ What requirements (e.g. technical or security) may be imposed on the network due to multiple users such as municipalities for Smart City or other utilities?

★ Clarify expectations with respect to access and usage rights. Emphasize scalability, flexibility, and open standards.



Smart Home market rapidly evolving

*PLMA does not engage in lobbying or standards development.

We focus on bringing organizations together to collaborate in order to realize shared goals for improving the energy industry.
We work with key allies toward a more sustainable energy future.

¡Gracias!

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