scenario shown in Figure 26 for each of the three charging patterns. Note that if all PEVs used set-time control, the charging load would most likely create an additional system peak at the designated set time (in this example, start at 9 PM). Uncontrolled charging would most likely cause an increase in the overall system peak. However, managed off-peak charging would shift PEV charging load into off-peak hours.[41]

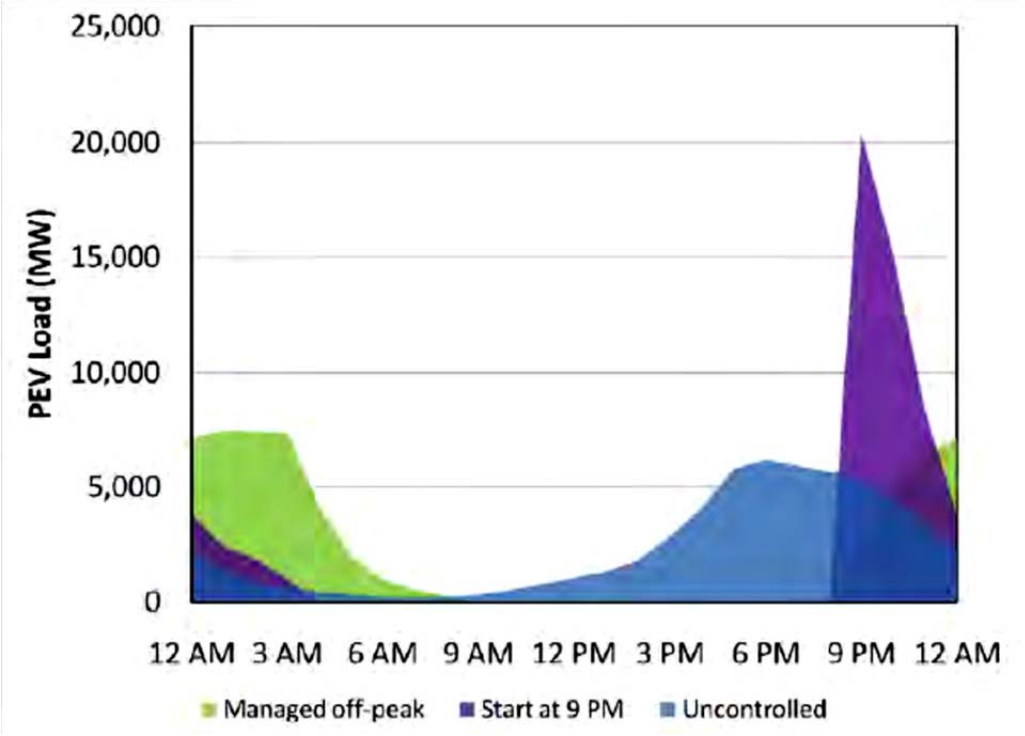

Figure 26 - PEV charging load in 2030, medium adoption scenario. Source: EPRI report titled "Transportation Electrification, A Technology Overview"

To further understand PEV charging impacts, EPRI conducted a System Impacts Assessment, designed to capture potential near term distribution system impacts in response to consumer adoption of PEVs. EPRI used a three-stage methodology, shown in Figure 27, consisting of the following types of analysis:

Asset Deterministic Analysis – Examined the ability of each asset to safely supply the worst-case projected load base. Existing capacity and number of customers serviced is determined using the circuit model and compared with the projected PEV load derived from probabilistic evaluations of PEV projections.

System Level Deterministic Analysis – This provides qualitative sensitivity information on system wide behaviour to worst-case charging conditions at various penetration levels.

[41] "Transportation Electrification, a Technology Overview" EPRI, Palo Alto, CA, July 2011, 1021334, p 5-5

Additionally, the analysis provides a quick evaluation of the boundaries for potential impacts to the system.

Stochastic Analysis – Evaluated both the system as well as PEV charging across not only the full calendar year but hundreds of different spatial and temporal variations. The results of this analysis provide insights into impact likelihood and severity as well as information concerning the conditions under which these particular impacts occurred.[42]

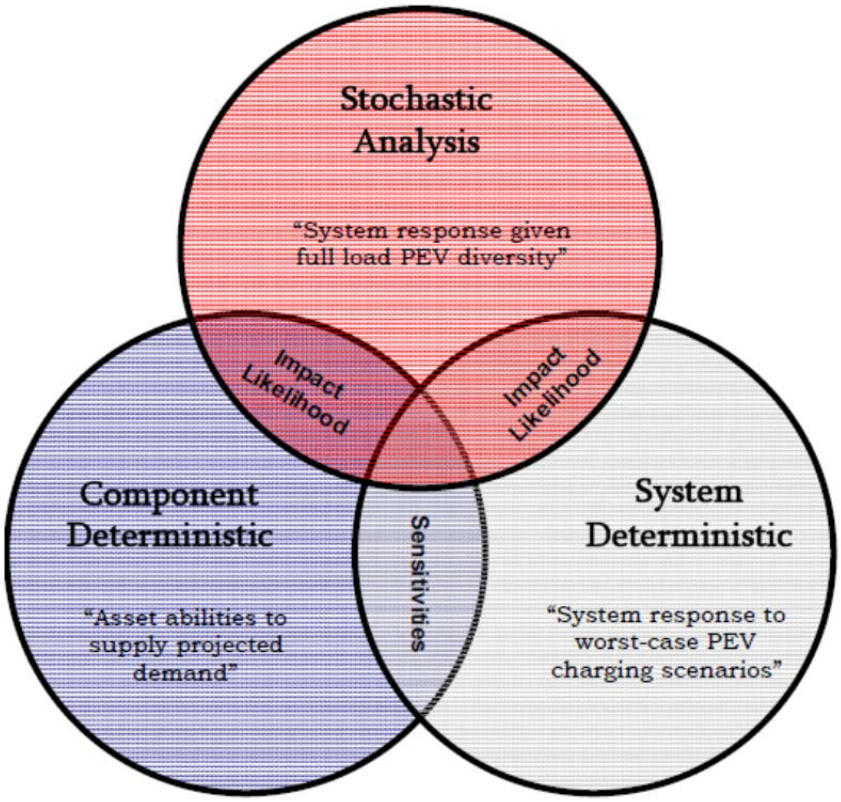

Figure 27 - PEV distribution impact evaluation methodology. Source: EPRI report titled "Transportation Electrification, A Technology Overview"

Deterministic and stochastic analyses of the potential load impacts on an actual distribution circuits are being conducted as part of a multi-utility project. The results to date, however, generally show the following:

- The extent of system impacts depends upon the PEV penetration and charge behaviors of PEV adopters.

[42] "Transportation Electrification, a Technology Overview" EPRI, Palo Alto, CA, July 2011, 1021334, p 5-15

- Due to diversity, the expected aggregate addition to system peak loads is 700-1000 Watt per PEV in a given utility territory. Based on typically daily driving statistics, the average energy delivered to a vehicle during a charge is 5-8 kWh for a midsize sedan.

- Recognizing that all distribution circuits will not realize the same level of PEV adoption, the extent of system impacts depends upon the PEV penetration and charge behaviors of PEV adopters

- The short-term impacts for most utilities studied should be minimal and localized. There is a possibility, however, of isolated impacts on some distribution transformers and secondary drops, particularly in neighborhoods with older distribution systems including underground systems.

- By system design, per-capita load growth (PEV or otherwise) will first impact devices closest to the customer

- Components closer to the customer are the most likely to be impacted as they do not benefit as greatly from PEV load diversity

- Low capacity per customer ratios combined with low PEV load diversity (assets closer to the customer) are the most likely to be impacted as they do not benefit as greatly from PEV load diversity

- The remaining capacity per customer can be used as a means for evaluating possible risk of impact due to customer adoption of PEVs

- The assets near the load are most susceptible to PEV clusters as the potential benefit of spatial diversity decreases. Older distribution systems (including underground systems), initially designed for much lower per-customer load than its current operation, it is likely that the PEV impacts are more severe and impactful than to a relatively newer infrastructure.

- Based on system configuration and customer adoption, PEV clustering will occur randomly throughout the system. While PEV clustering may indicate an increased risk higher than average loading levels, PEV clustering alone does not signify the likelihood of negative impact occurrence as the other PEV load characteristics must also be taken into account

- Transformers characterized by low capacity per customer ratios are the most likely to be impacted by PEV adoption. Furthermore, transformers lower than 25 kVA nameplates are expected to be the most susceptible to becoming overloaded as these transformers typically have lower amounts of existing capacity which can be quickly consumed by one or more PEV.

- Likelihood of a given system component becoming overloaded is a function of the remaining capacity on the element and the number of customers served from the element that are potential charging locations for PEVs. The increased loading on the substation transformer tends to be tempered by the diversity in charging times for the many PEVs that are served across the entire feeder. Conversely, a single service transformer serving 5-10 customers may become overloaded with 1 or 2 higher charge current PEVs.

- Stochastic results show that the temporal and spatial diversity of PEVs charging on the system mitigates mass overloads of any particular asset class for penetration levels in the 2-8% range.

- Controlled charging can defer projected impacts due to load growth to later years, but care must be taken to ensure that the control strategy does not create secondary system peaks.[43]

Opportunities for managing grid impacts from PEV charging

With wide a range of potential outcomes for PEV development, the possible courses of action a utility could take are also widely varied. Time-variant rates are one example of managed off-peak control that can be offered to customers to encourage PEV charging during the least expensive hours, typically overnight. Since the price of electricity generally follows available capacity, time variable rates can be especially effective for encouraging PEV charging when capacity is typically more than sufficient to meet increases in demand. Overnight PEV charging also supports use of renewable generation sources such as wind, which is typically more available during night time hours.

The Illinois Commerce Commission's "Initiative on Plug-In Electric Vehicles Rates Working Group Report" helps to narrow the possible outcomes by suggesting that key market players focus on "encouraging PEV owners to charge their vehicles primarily during off-peak hours – whether through time-variant supply service offerings, demand response, or other load management programs." The report specifically suggests that:

- Time-variant rates, whether provided by the utility or a RES, can provide PEV owners with the opportunity to save on their energy costs by moving vehicle charging and other electricity usage off peak, when electricity prices on such rates are typically lower.

- Moving the PEV charging load to off-peak hours could help defer the need to increase the capacity of electric distribution system assets, particularly in areas where several PEVs may be clustered on the same local distribution equipment.

[43] "Transportation Electrification, a Technology Overview" EPRI, Palo Alto, CA, July 2011, 1021334, pp 5-32, 5-33

- Moving PEV charging off-peak could lower or mitigate the impact on the marginal cost of electricity for all consumers by achieving more efficient utilization of generating capacity.

- Through battery storage, off-peak PEV charging can help integrate energy from intermittent renewable resources (*e.g.*, nighttime wind) onto the electric grid.

How ComEd's AMI network enables these capabilities

ComEd has designed its AMI network to accommodate this wide range of possible capabilities, impacts, and timelines for PEV development, and to enable the suggested path forward for developing PEVs.

First, ComEd's AMI infrastructure enables the entire range of charging rates offered by suppliers that will facilitate PEV deployment. AMI meters that gather hourly data will allow suppliers to offer time-variant rates that are low during off-peak hours but are higher during on-peak hours. Suppliers will be able to offer such low price, off-peak charging rates to customers as soon as the customer receives and AMI meter.

Second, ComEd's AMI communications network enables the integration of smart EVSE (electric vehicle supply equipment, a.k.a. charging equipment), to perform functions such as the transmittal of pricing signals directly to the EVSE. Functionality such as this allows PEV owners to fully automate the management of their PEV charging based on a desired price point in a "set it and forget it" manner.

Third, the ability to associate AMI meters with distribution system assets, such as transformers, provides the ability to continuously track the loading of such assets by aggregating data from the associated AMI meters. This, in turn, enables real-time alarms and notification when the loading on such assets exceeds a pre-determined threshold, allowing the asset to be addressed proactively, before it fails. This capability will be especially beneficial for monitoring the load on transformers in residential areas with higher rates of PEV adoption, but is equally applicable to any type of load that a customer may add at his or her premises.

2. Distributed Generation (DG)

Potential abilities of DG

The MIT report titled "The Future of the Electric Grid" defines DG as "relatively small-scale generators that produce several kilowatts (kW) to tens of megawatts (MW) of power and are generally connected to the grid at the distribution or substation levels." The report identifies a wide range of DG generation technologies, "including gas turbines, diesel engines, solar photovoltaics (PV), wind turbines, fuel cells, biomass, and small hydroelectric generators. Some DG units that use conventional fuel-burning engines are designed to operate as combined heat and power (CHP) systems that are capable of providing heat for buildings or industrial processes using the "waste" energy from electricity generation."

The potential benefits of DG are myriad, and are explained in detail in the MIT report (summarized in Figure 28).

Reliability and Security Benefits	Economic Benefits	Emission Benefits	Power Quality Benefits
• Increased security for critical loads • Relieved transmission and distribution congestion • Reduced impacts from physical or cyberattacks • Increased generation diversity	• Reduced costs associated with power losses • Deferred investments for generation, transmission, or distribution upgrades • Lower operating costs due to peak shaving • Reduced fuel costs due to increased overall efficiency • Reduced land use for generation	• Reduced line losses • Reduced pollutant emissions	• Voltage profile improvement • Reduced flicker • Reduced harmonic distortion

Source: U.S. Department of Energy, *The Potential Benefits of Distributed Generation and Rate-Related Issues that May Impede Their Expansion: A Study Pursuant to Section 1817 of the Energy Policy Act of 2005* (Washington, DC, 2007); and P. Chiradeja and R. Ramakumar, "An Approach to Quantify the Technical Benefits of Distributed Generation," *IEEE Transactions on Energy Conversion* 19, no. 4 (2004): 764–773.

Figure 28 - Theoretical Benefits of DG. Source: MIT study "The Future of the Electric Grid"

Many of the benefits in the above table will accrue directly to the consumer who owns/operates the DG source. For example, the consumer will get a reduced energy bill for any power supplied by their DG system. The consumer will also get a monetary benefit for any demand response service provided by the DG system or for any energy sold back to the grid.

Potential consequences of DG on the electric distribution system

While DG has the potential to bring a number of benefits to both consumers and the operators of the electric grid, it presents grid operators with a number of challenges. First and foremost, the variability of renewable resources creates a potential problem for voltage and frequency regulation when a large amount of DG is connected to the electric grid. In particular, solar PV resources have varied output, as demonstrated in Figure 29.

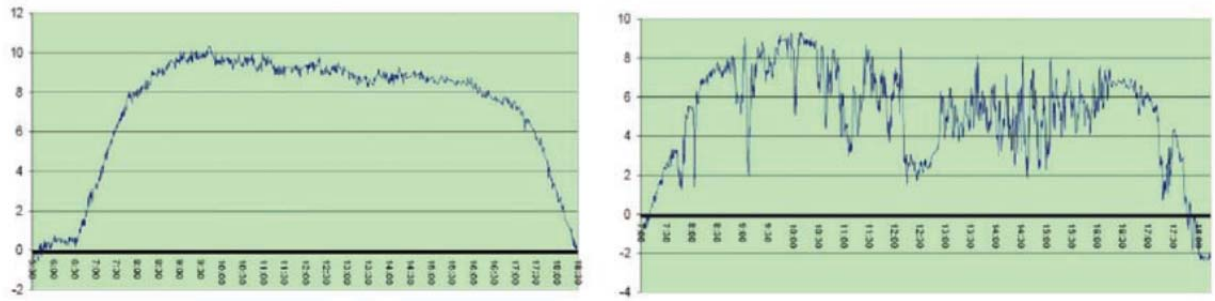

Figure 29 - Nevada Solar Photovoltaic (PV) Plant Output on a Sunny Day (Left) and a Partly Cloudy Day (Right) in 2008. Source: MIT study "The Future of the Electric Grid"

The variability of DG resources can have a particularly adverse effect on grid voltage and frequency stability when significant amounts of DG capacity are added in geographically concentrated areas. When large DG applications are connected to an already at-capacity substation, the variability issue can lead to significant reliability concerns.

Uncertainties surrounding DG development

Furthermore, DG cost-competitiveness – and thus likelihood of its proliferation – faces a number of significant uncertainties. Currently, a number of state and Federal tax incentives help make DG costs affordable to customers. The future of the Federal incentives remains very uncertain, which could contribute to a significant increase in installed costs for DG units. On the other hand, DG manufacturers are improving manufacturing efficiency in a consistent manner, which eventually could lead to DG proving cost-effective when compared to large-scale utility generation (see projection in Figure 30).

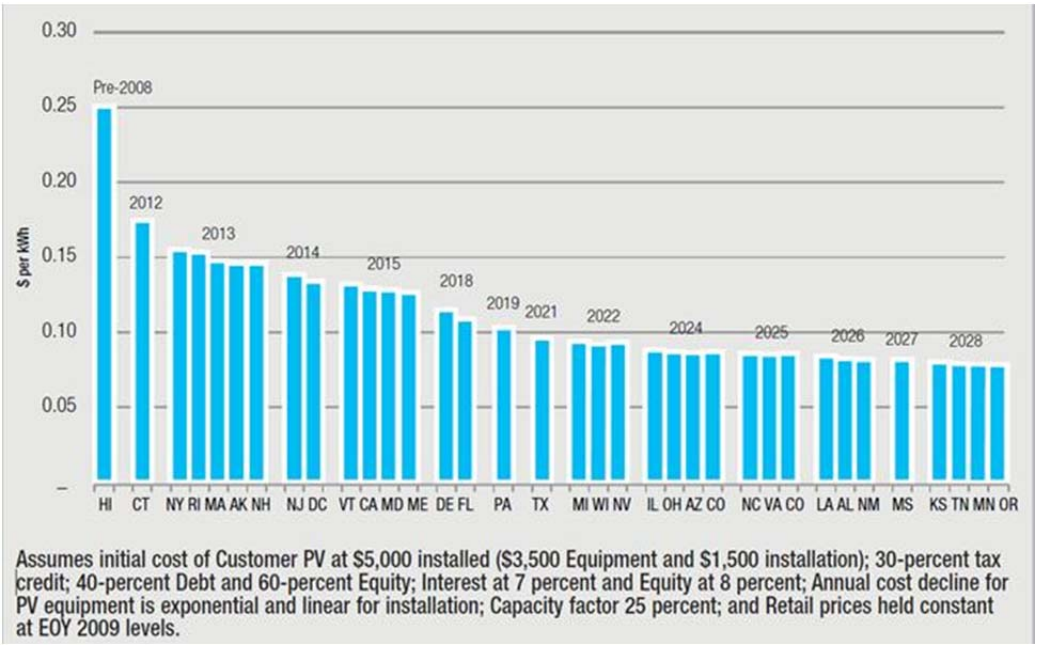

Figure 30 - Grid Parity of Solar PV Forecast by State. Source: Accenture

How ComEd's AMI network enables these capabilities

ComEd's AMI network will enable full integration of DG resources with the electric grid. First, ComEd's AMI meters will all be equipped with net metering capability. As a result, customers will benefit by receiving a bill credit for any energy of a DG system sold back to the grid.

Second, ComEd's AMI meters will enable dynamic rates that take advantage of DG systems by collecting hourly interval usage from the AMI meters to use in billing. As a result, customers with peak-coincident DG systems (such as solar) will be able to benefit significantly from dynamic rates offered by suppliers that charge high prices for usage during peak hours.

Third, ComEd's IT systems will be capable of communicating with DG systems through the AMI network infrastructure. This enables DG systems to provide frequency regulation and other ancillary services to the grid where possible, providing an additional financial benefit to consumers.

Finally, the AMI network can be used to remotely shut off output of DG when system conditions dictate the need to reduce system supply or when sections of the network need to be safely shut down for maintenance of the grid or emergency work.

3. Storage

Potential impacts of storage

Energy storage technologies hold significant promise for making electricity cheaper, more reliable, and more environmentally friendly for customers. That promise spans the electricity value chain, as can be seen in Figure 31. The Smart Grid and AMI networks in particular have the potential to facilitate growth in many of the applications for energy storage identified by EPRI.

Value Chain	Application		Description
Generation & System-Level Applications	1	Wholesale Energy Services	Utility-scale storage systems for bidding into energy, capacity and ancillary services markets[1]
	2	Renewables Integration	Utility-scale storage providing renewables time shifting, load and ancillary services for grid integration
	3	Stationary Storage for T&D Support	Systems for T&D system support, improving T&D system utilization factor, and T&D capital deferral
	4	Transportable Storage for T&D Support	Transportable storage systems for T&D system support and T&D deferral at multiple sites as needed
T&D System Applications	5	Distributed Energy Storage Systems	Centrally managed modular systems providing increased customer reliability, grid T&D support and potentially ancillary services
	6	ESCO Aggregated Systems	Residential-customer-sited storage aggregated and centrally managed to provide distribution system benefits
	7	C&I Power Quality and Reliability	Systems to provide power quality and reliability to commercial and industrial customers
	8	C&I Energy Management	Systems to reduce TOU energy charges and demand charges for C&I customers
	9	Home Energy Management	Systems to shift retail load to reduce TOU energy and demand charges
End-User Applications	10	Home Backup	Systems for backup power for home offices with high reliability value

T&D = Transmission and Distribution; C&I = Commercial and Industrial; ESCO = Energy Services Company; TOU = Time of Use

Figure 31 - Energy Storage Value Chain. Source: EPRI, "Electricity Energy Storage Technology Options: A White Paper Primer on Applications, Costs, and Benefits"

AMI networks can increase the value of energy storage applications for both utilities and for customers. On the distribution side, storage is capable of providing valuable ancillary services to keep the grid functioning efficiently and reliably. Especially as intermittent renewable resources become more prevalent, applications that can quickly store and discharge energy with minimal energy loss will prove more important for grid operators in keeping load and supply balanced. On the customer side, storage will provide an opportunity for customers to fully monetize the benefits of renewable DG systems by storing energy when the resource is available. And as a simultaneous benefit to the customer and the utility, distributed energy storage applications will provide a key demand response and frequency regulation resource that will improve system reliability and bring a monetary benefit to the consumer.

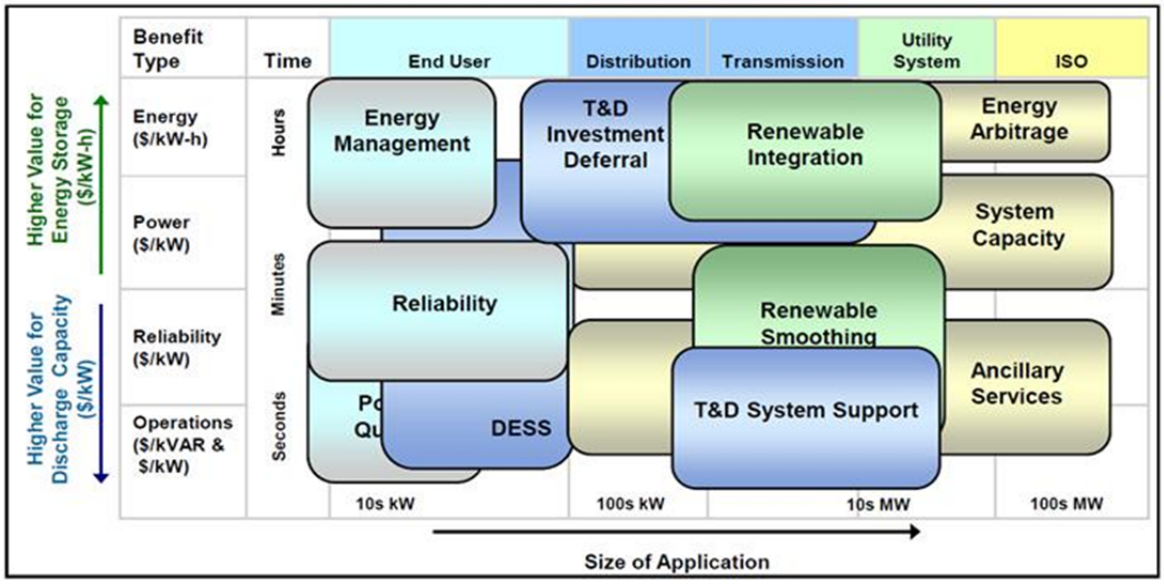

Figure 32 - Energy Storage Benefits Summary. Source: EPRI, “Electricity Energy Storage Technology Options: A White Paper Primer on Applications, Costs, and Benefits”

The technology options available for energy storage are also very diverse, and have benefits for different applications (as summarized in Figure 32). That said, AMI networks are capable of integrating all types of storage applications.

Technology Option	Maturity	Capacity (kWh)	Power (kW)	Duration (hrs)	% Efficiency (total cycles)	Total Cost ($/kW)	Cost ($/kW-h)
Energy Storage for Distributed (DESS) Applications							
Advanced Lead-Acid	Demo-Commercial	100-250	25-50	2-5	85-90 (4500)	1600- 3725	400- 950
Zn/Br Flow	Demo	100	50	2	60 (>10000)	1450-3900	725-1950
Li-ion	Demo	25-50	25-50	1-4	80-93 (5000)	2800-5600	950-3600
Energy Storage for Residential Energy Management Applications*							
Lead-Acid	Demo-Commercial	10	5	2	85-90 (1500-5000)	4520-5600	2260
		20		4			1400
Zn/Br Flow	Demo	9-30	3-15	2-4	60-64 (>5000)	2000-6300	785- 1575
Li-ion	Demo	7-40	1-10	1-7	75-92 (5000)	1250-11,000	800-2250

1. Refer to the full EPRI report for important key assumptions and explanations behind these estimates. All systems are modular and can be configured in both smaller and larger sized not represented. Figures are estimated ranges for the total capital installed cost estimates of "current" systems based on 2010 inputs from vendors and system integrators. Included are the costs of power electronics if applicable, all costs for installation, step-up transformer, and grid interconnection to utility standards. Smart-grid communication and controls are also assumed to be included. For batteries, values are reported at rated conditions based on reported depth of discharge. Costs include process and project contingency depending on technical maturity. The cost in $/kW-h is calculated by dividing the total cost by the hours of storage duration.
2. For CAES and Pumped Hydro, larger and smaller systems are possible. For belowground CAES the heat rate may range from ~3845-3860 Btu/kWh and the energy ratio is 0.68-0.78; for aboveground CAES the heat rate is ~4000 Btu/kWh and the energy ratio is ~1.0.

Figure 33 - Energy Storage Characteristics by Application (Kilowatt-scale). Source: EPRI, "Electricity Energy Storage Technology Options: A White Paper Primer on Applications, Costs, and Benefits"

How ComEd's AMI network enables these capabilities:

ComEd's AMI network enables energy storage applications through three key channels: net metering for distributed applications, measuring interval energy usage to enable dynamic rates, and through two-way communication and control of storage devices through the AMI network. All of the AMI meters will be net metering enabled, so in combination with a dynamic rate offered by a supplier, a customer could benefit by storing energy during off-peak periods and discharge energy during the more expensive peak period. The hourly intervals measured by the AMI meters will also be critical to enabling such dynamic rate offerings (as discussed earlier in this chapter). Finally, the two-way communications capabilities of the AMI network will enable DLC and other demand response or ancillary services programs that utilize energy storage applications.

C. Data Privacy

1. ComEd's Plan to Protect Customers' Data Privacy

ComEd is dedicated to maintaining the highest level of communications security to help ensure that customer-related energy data remains confidential and secure at all times.

As noted earlier, the AMI meters do not store or transmit any personal identification information about customers, do not identify electrical devices within a home, do not identify an occupant's specific behavior or activities, and do not determine physical locations of persons within a home. These AMI meters record only information about electricity usage at a premises – just as existing mechanical meters do; they are not surveillance devices.

ComEd will also permit consumers to consent to the disclosure of personal energy information to third parties through electronic, web-based, and other means in accordance with state and federal law and regulations regarding consumer privacy and protection of consumer data. Therefore, any applications discussed previously that will provide individual data to third parties, such as the "Green Button" web initiative, will require direct consent from the customer before any data is transmitted by ComEd to the third party.

In particular, the "Green Button" web initiative mentioned earlier in this chapter provides an example of how ComEd will provide for customer control of data regarding their electricity usage. . On March 22nd, ComEd joined a number of other utilities across the US to announce their participation in the "Green Button" initiative, a voluntary effort by utilities to provide energy usage data to customers in a standard format to help them make informed decisions about how to reduce energy consumption and save money. Launched in January, "Green Button" is based on a consensus industry standard that was created through a public-private partnership with the Commerce Department's National Institute of Standards and Technology. [44] "Green Button" is expected to foster innovation by third-party apps developers and providers of energy management services. This will enable customers to take advantage of the following:

- customizing thermostats for savings and comfort;
- community and student energy efficiency competitions;
- improved decision-support tools to facilitate energy efficiency retrofits;
- measurement of structural energy efficiency investments; and
- optimizing the size of rooftop solar panels.

Customers can provide energy usage data to energy suppliers and other energy companies to participate in programs that can further reduce their energy costs. While the "Green Button" provides a standardized and easy manner for the customer of provide this data to third parties, these third parties aren't able to access this data without express permission from the customer.

The Illinois Consumer Fraud and Deceptive Business Practices Act requires that an electric service provider maintain customers' personal information "solely for the purpose of generating the bill for such services". This requirement will not change under ComEd's AMI

[44] http://www.whitehouse.gov/blog/2011/11/21/empowering-customers-green-button

plan. Furthermore, in accordance with relevant laws and regulations, ComEd will not disclose or sell any personally identifiable information about a customers' energy use without approval, except as required by regulatory agencies or governmental authorities. If ComEd is able to track vulnerable customers for the purpose of milestones and metrics set forth in this Plan, this data will remain confidential and secure at all times. ComEd will not disclose or sell any personal information about vulnerable customers, or their self-identified vulnerability, except as required by regulatory agencies or governmental authorities.

Additionally, ComEd will fully comply with the Illinois Personal Information Protection Act. This Act states that: "any data collector that owns or licenses personal information concerning an Illinois resident shall notify the resident at no charge that there has been a breach of the security of the system data following discovery or notification of the breach." ComEd will fully comply with this requirement by contacting all customers to inform them if there is a breach of data security

D. Plan to Enable Existing and Future Smart Grid Technologies and Applications that Deliver Value to Customers

While ComEd's AMI system will enable all of the Smart Grid functionalities identified above, there are still many uncertainties about what level of additional action ComEd will need to take in the future to facilitate yet-undeveloped, cost-effective technologies and applications. In order to enable these future applications once they become mature enough to deliver customer value, ComEd has developed a process for researching and tracking future customer-side Smart Grid applications in order to identify those in which ComEd should invest more heavily to provide additional functionalities directly to customers.

1. ComEd's Process for Enabling Future Smart Grid Applications

Specifically, ComEd has developed a three-stage process to identify, evaluate, and implement customer applications that will unlock key functionalities of the Smart Grid.

First, ComEd proposes to track the availability and demand for potential customer applications through customer-centric technology research. ComEd also proposes to conduct a detailed technology market assessment and technology provider analysis for the various customer-side technologies. This type of analysis is designed to help ComEd understand where potential customer applications fall on the maturity curve (see Figure 34). This knowledge will also enable the development of service offerings in a manner that is most beneficial to customers.

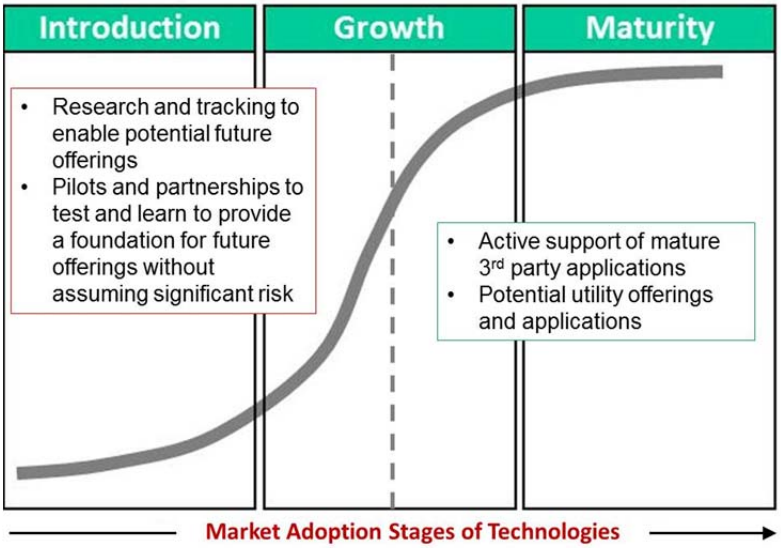

Figure 34 - Maturity Curve for Smart Grid Applications

This market assessment and research identifies technologies that demonstrate potential to unlock Smart Grid functionalities for customers and will allow ComEd to test Smart Grid applications through pilots to learn how to best enable them for the benefit of customers. In addition, ComEd proposes to develop a model to help systematically identify entities interested in testing and deploying AMI-enabled technologies in the introduction and growth phases. Furthermore, ComEd proposes to develop a roadmap to facilitate piloting a broad range of customer-side technologies, including: distributed renewable generation, battery storage technologies, plug-in electric vehicles, and HAN technologies.

Third, ComEd will facilitate future customer applications as they become required or prove to deliver value. The primary way that ComEd will accomplish this goal is working with third parties that want to leverage ComEd's AMI network to enable key Smart Grid functionalities for the benefit of ComEd's customers. ComEd's Test Bed will allow third parties to use ComEd's system to test programs, technologies, business models, and other Smart Grid-related activities, provided those third parties qualify to use the AMI system.

Furthermore, as discussed earlier in this chapter and in the previous chapter, ComEd has already begun to deploy a number of programs designed to deliver immediate value from its AMI system investment. For example, ComEd is enhancing a web portal that allows customers to view and manage their interval electricity usage, as well as view tips and tricks to help them set an energy reduction goal and save energy. In addition, ComEd is designing an opt-in, market-funded, Peak-Time Rebate (PTR) program (as explained in earlier in Chapter 3).

2. ComEd's Planned Activities to Facilitate Future Customer Applications

ComEd's current plan for enabling future customer applications includes the following:

Peak Time Rebate Program	Opt-in, market funded rebate for customers with AMI meters that reduce usage during peak events
Web Portal	Website that displays interval usage, energy saving tips and tricks, and comparison of energy usage to anonymous neighbors.
Smart Grid Test Bed	Platform for third parties to test applications over ComEd's AMI network
Smart Grid Technology Tracking	Track development of technologies capable of enable Smart Grid functionalities for consumers
Customer Research: Smart Grid Technology Value Proposition to Customers	Understand customer demands and value from developing technologies
Contracts with Vendors of Maturing Smart Grid Technology	Executed when technology that will deliver Smart Grid functionalities to customers is identified
Implementing New Programs to Facilitate Future Customer Applications	Executed when application/program that will deliver Smart Grid functionalities to customers is identified

Figure 35 - ComEd Planned Activities to Facilitate Smart Grid Functionalities

ComEd's approach to enabling future customer applications and technologies focuses on shifting the cost for developing these applications to the third-party vendors where possible. The Test Bed, for example, provides third-parties vendors with access to the AMI network, provided those third-party vendors qualify to use the Test Bed. The Test Bed is designed to let outside parties test new technologies and services that leverage the AMI network to deliver value to customers without cost to the customer for that development.

E. Milestones and Metrics

Many of the functionalities unlocked through ComEd's deployment of AMI will be available to the customer as soon as the AMI meter is installed at their premises and activated pursuant to the AMI deployment schedule described in Chapter 2. ComEd's AMI meters will unlock key functionalities as described earlier in this chapter, including:

- Suppliers' ability to offer dynamic rates and PEV charging rates
- Net metering for DG and storage
- Wireless communication from the AMI meter through the ZigBee® standard

- Interval data available for viewing and download on the web portal
- Ability to enroll in the PTR program
- Faster and simpler enrollment for the RRTP program

Therefore, the milestones for enabling these foundational capabilities will be realized immediately as AMI meters are deployed and activated pursuant to the AMI deployment schedule (see).

Year	# of Meters Deployed	Operating Centers served by Cross Dock #1	Operating Centers served by Cross Dock #2
2012	131,192	Remaining Maywood (Residential), Chicago South (Residential)	N/A
2013	384,854	Remaining Maywood (Commercial), Chicago South	Glenbard
2014	535,794	Chicago South	Glenbard, Mount Prospect
2015	530,355	Chicago South, Crestwood	Mount Prospect, Skokie, Chicago North
2016	459,754	Crestwood, Bolingbrook, University Park	Chicago North
2017	496,795	University Park, Joliet	Chicago North
2018	448,320	Joliet, Aurora	Chicago North
2019	401,319	Aurora, Elgin, Crystal Lake	Chicago North, Libertyville
2020	351,766	Crystal Lake, Rockford	Libertyville, Dekalb
2021	288,851	Rockford, Dixon, Freeport	Streator, Dekalb
TOTAL	**4,029,000**		

Figure 36).

Year	# of Meters Deployed	Operating Centers served by Cross Dock #1	Operating Centers served by Cross Dock #2
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2021	288,851	Rockford, Dixon, Freeport	Streator, Dekalb
TOTAL	**4,029,000**		

Figure 36 - Meter Deployment Rollout

Key AMI Meter Deployment Milestones and Metrics (see Chapter 2 for full list)

- Phase 1 IT release scheduled for end of Q3 2012
- First AMI meter installed Q4 2012
- Approximately 400,000 AMI meters installed each year for ten years (see Figure 6 in Chapter 2 for full roll-out schedule)
- Last non-AMI electro-mechanical meter replaced with AMI meter in 2021
- Phase 2 IT release to support Full Deployment scheduled by end of Q3 2013
- Phase 3-n IT releases to support Full Transformation by end of 2014 (see Figure 11 in Chapter 2 for full details)

Key Research Milestones and Metrics

- Quarterly: Provide refresh of technology tracking outlook
- Quarterly: Update customer research to understand how preferences and demand for Smart Grid-related applications are developing

Key PTR Milestones and Metrics

- Key milestone: A proposed tariff will be filed with the ICC within 60 days of the ICC's approval of ComEd's AMI Plan
- Key milestone: Customers with installed and certified AMI meters will be eligible to enroll in PTR as soon as the PTR tariff is approved by the ICC
- Key milestone: The first PTR event is expected take place in the summer of 2013
- After the fourth year of the PTR program, ComEd will submit a report detailing:
    - Number of customers eligible for the PTR program

- Number of customers enrolled in the PTR program
- Average peak reduction for enrolled customers
- Average rebate for enrolled customers
- Total events called by year
- Total program energy and bill savings by year

Key Web Portal Milestones and Metrics

- Customers will have access to the web portal as soon as their AMI meter is installed and certified
- Customers will have access to "Green Button" functionality as soon as they have access to the web portal
- Key milestone: web portal will be integrated with ComEd.com by the fourth quarter of 2012

Metrics Related to "Vulnerable" Customers to Track Impact of Costs, AMI Deployment and Customer Benefits

The Commission's Order in Docket No. 12-0298 directed ComEd to discuss with stakeholders and Staff the methodology to define and identify "vulnerable" customers. ComEd contacted stakeholders and Staff to attempt to initiate discussions pursuant to the Order regarding the methodology to define and identify "vulnerable" customers. However, in light of the complexities of the issues involved, resolution of the methodology to define and identify "vulnerable" customers was not able to be achieved in the time allowed to file this modified Plan. Therefore, ComEd will continue to engage in discussions with stakeholders and Staff, and will include a proposal for the methodology to define and identify "vulnerable" customers in the first annual report to be submitted on April 1, 2013. ComEd plans ongoing discussions to commence shortly after the filing of its statutorily required peak time rebate program and conclude by December 2012.

The Commission's Order in Docket No. 12-0298 also states that "[i]f further information is required to allow ComEd to track vulnerable populations and that information is not easily available (or only at significant cost) then ComEd should provide an explanation of the barriers to tracking vulnerable populations." ComEd interprets this directive to require such information to be included in this modified Plan and in its first annual report to be submitted on April 1, 2013. There are significant barriers to tracking vulnerable populations. Based on the testimony of AARP/AG witness Dr. Meghan Sandel, "vulnerable" customers or populations may include: children under the age of 5, seniors, low-income individuals, people who are socially isolated, those with a functional mobility or impaired mobility, pregnant women, those with sleep apnea, those with allergies, those with hypertension, those with diabetes, those with pulmonary

disorders, those with asthma, those with learning disabilities and those with lead in their home. ComEd's customer files do not include income, age, or other "vulnerability" indicators described in the testimony of Dr. Sandel, and such "vulnerability" indicators would be considered highly personal and private by customers. Accordingly, in order to compile this personal information, surveys would have to be conducted among customers. Customers would have to identify themselves as "vulnerable" based on their responses to the questions. A census survey of all 3.4 million residential customers would likely be very costly. Further, ComEd assumes that stakeholders and the Commission would intend for responses to the survey to be voluntary, meaning customers would not be obligated to complete the survey. Thus, many customers will elect to not answer questions posed on behalf of ComEd that reveal personal information. Many customers may find certain questions of a personal nature to be intrusive or offensive. Therefore, such a survey may be impractical as well as costly. These and other issues will need to be addressed in ongoing discussions with stakeholders and Staff.

For purposes of this modified Plan, ComEd will initially track the following metrics for all customers by customer class, by usage level for the residential, watt hour, and small load delivery service classes, and for low income customers that are potentially identifiable through energy assistance programs. For purposes of this modified Plan, "low income customers" will be defined as those customers participating in the Low Income Home Energy Assistance Program (LIHEAP), a deferred payment arrangement (DPA), or the Percentage of Income Payment Program (PIPP). For purposes of this modified Plan, "customer class" will be defined as ComEd's 15 delivery classes as defined in its General Terms and Conditions (Sheets 135 -138).

- ComEd initially will report the following metrics on an annual basis:
    - Bill impacts associated with the costs for implementation of ComEd's Smart Grid Advanced Metering Infrastructure Deployment Plan for low, average, and higher usage level customers pursuant to approved rates and surcharges. The usage level calculations will be values for a "typical" customer at the 25th, 50th, and 75th percentile of total usage for each applicable delivery service class.
    - Number of customers that have created an account on ComEd.com – by usage levels, customer class, and low income customers. An account on ComEd.com is necessary for viewing the web portal.
    - Number of customers with ComEd.com accounts that have viewed the web portal – by usage levels, customer class, and low income customers.
    - Change in customers' energy consumption for customers that have viewed the web portal. ComEd will work with the web presentment vendor to define the business processes necessary to track an energy usage impact of accessing the web portal.
    - Number of customers enrolled in the Residential Real Time Pricing (RRTP) program (ComEd's hourly pricing program) by usage levels, customer class, and low income customers.

- Number of customers enrolled in any future Time of Use (TOU) program that ComEd might offer by usage levels, customer class, and low income customers.

- Number of customers enrolled in ComEd's Peak Time Rebate ("PTR") program by usage levels, customer class, and low income customers.

- Number of deposits required, disconnection notices, and disconnections for nonpayment for all customers and, if applicable, by low income customers. Other "key indicia associated with credit and collection activities targeted to low income customers" may be incorporated in the project plan's business process redesigns for future implementation.

Of course, these metrics are subject to further revision and refinement based on discussions with Staff and stakeholders regarding the tracking of "vulnerable" populations.

Chapter 4: Customer Outreach and Education

A. Overview

ComEd's AMI deployment initiative, enabled by PA 07-0616, will impact the ~3.8 million customers served by ComEd for the next 10 years and beyond. As the AMI Deployment Plan investment begins in 2012, the objective of the education and outreach effort is to help customers capture value from the investment, enhance the customer experience by providing actionable information, easy access to information and simple enrollment in Residential Real Time Pricing (RRTP)[45] or Peak Time Rebate (PTR) programs, and proactively address negative experiences and perceptions.

The customer education and outreach plan has been developed to take customers through a journey that seeks to build awareness, strengthen understanding, promote engagement through participation, and encourage customers to advocate beneficial programs facilitated by the advanced meter technology such as RRTP and PTR. We recognize that not all customers will complete the entire journey, but we are committed to engaging as many customers as possible, and helping them move through the steps of the journey over the next ten years to facilitate the realization of customer benefits.

This education and outreach plan leverages customer research, best practices and lessons learned from previous implementations of advanced meter technology by the Pilot and by other utilities. The key audiences in this plan are residential and small business customers. We will utilize readily available data such as type of building and energy usage at the onset of our education and outreach program. As implementation progresses, audiences will be differentiated by demographics, geography and behavioral data, allowing us to test the effectiveness of both benefit messaging and marketing methods.

The education and outreach plan will use a targeted messaging strategy to deliver the messages that will most easily resonate with residential and small business customers, with initial message themes of control / empowerment, savings, reliability, service, and future preparedness for future technology enabled by smart meters.

Messages will be delivered via a staged messaging approach. Initial customer messages are intended to enhance comprehension of smart meters and explain the benefits of the pricing programs. Messages will also be tailored to audiences based on data and ethnic composition. Targeted messages delivered via strategies by audience with specific methods will support our efforts to move customers along their journey. The outreach and education will communicate to customers the benefits of the smart meters by signing up for pricing plans, such as residential real time pricing (RRTP) and Peak Time Rebate (PTR) or a pricing program developed by a RES, and how they can manage their energy with these programs and save money.

[45] The Residential Real-Time Pricing (RRTP) program is currently under review in Docket No. 11-0546 where the Illinois Commerce Commission is considering the modification or termination of the program

Leveraging other utilities' best practices, methods have been identified to support each of the strategies in this plan. Chapter 2 contains the anticipated smart meter deployment schedule by year and operating center. In addition, an extensive program of primary and secondary research will be employed to support planned initiatives, as well as to measure the overall success of the customer education and outreach initiatives.

B. Background

As a result of PA 97-0616, AMI deployment is expected to impact virtually all ~3.8 million ComEd customers through meter upgrades, infrastructure upgrades in the community, system improvements and new information and programs. This section summarizes the key learnings from the Pilot and the information about other advanced meter deployments.

1. AMI Pilot Lessons

ComEd deployed "advanced meters" and an AMI Network for approximately 130,000 residential and non-residential customers as part of the Pilot from November 2009 through May 2011.

The meter installation communication protocol for the pilot included four steps: a pre-installation letter sent out three weeks prior to the week of installation, a pre-installation automated outbound call one week prior to installation, a personal notification immediately prior to meter exchange, and a door hanger after the installation of the advanced meter was completed explaining the benefits of advanced meters (or explaining why a new meter couldn't be installed).

Recommendations Based on Key Customer Communication Learnings from the AMI Pilot:

- Recommendation to continue the pre and post meter installation communication methods used, as customer satisfaction with the installation process was high at 90%.
- Reinforcement of the use of the door hanger even if the customer is home at the time of the installation.
- Revision to the treatment of multiple occupancy buildings to include leaving multiple door hangers at the main entrance.
- The web site, www.comed.com\smartmeter, was updated for usability and contained information including: the installation process, a pilot overview, FAQ, and how to read the new meters.
- Community advanced meter awareness and education events should take place prior to and during advanced meter deployment to raise awareness of the meter installations within communities

2. Information from Other U.S. Deployments

Many U.S. utilities have already embarked upon mass deployments of advanced meters in their service territories. A number of the utilities recognize the importance of communicating effectively with their customers about the benefits of AMI deployment. Each utility faces a different political and cultural environment, ComEd will consider the strategies and methods employed by other utilities to identify approaches to better educate and engage its customers.

As a result, interviews were conducted with subject matter experts in education and outreach at some of the larger utilities that deployed advanced meters (and grid modernization) in their service territory including CenterPoint Energy (CPE), Detroit Edison (DTE), Florida Power & Light (FPL), Oncor, Pacific Gas & Electric (PG&E), Portland General Electric (PGE), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E). ComEd obtained information about deployment messaging, general communication methods, meter installation communication methods, issue management methods, meter accuracy and high bill mitigation methods, media efforts and employee communication methods.

Deployment Messaging

- FPL's key messages focused on customer benefits, emphasizing reliability and control
- Oncor's messaging emphasized customer control; secondary messages revolved around environmental savings and energy efficiency
- SCE's messages that focused on cost savings resonated with customers
- SCE, Oncor and CPE provided messaging to target specific regions (e.g., demographic) of their service territory and / or segments

Communication Methods

- SDG&E developed a 90/60/30/7/0 day communications plan to educate each community prior to meter deployment.
    - At 90 days, SDG&E met with community leaders and influencers; at 60 days, they attended community events; at 30 days, direct mail was sent to citizens; at 7 days, outbound calls were made to residents
    - SDG&E also had an "in-field team" (made up of retirees) that went door to door after the meter installation to survey them about their experience and answer questions (e.g., energy efficiency).
- CPE's deployment communication methods included publishing a quarterly customer newsletter, website updates, automated emails to customers before meter installation, pre and post meter installation door hangers, and instructional videos and brochures.

- CPE's installers took pictures of the final reading on a customer's old meter before exchanging it with a two-way communicating digital meter as part of their installation process.

- CPE hosted online public chat forums for customers to ask questions regarding their deployment.

- FPL's post-installation communications demonstrated how to get value from its Energy Dashboard.

- SCE's communication material (e.g., notice letters, door hangers) had a 3-layered approach: two-second tagline, elevator pitch, detailed fact sheet. SCE also developed and offered a budget assistant tool to provide customers with energy use data, budget goals and alerts.

- PGE developed and used four separate door hangers during the installation process; "successful installation," "we missed you," "we've caused a problem on your property and will fix it," and "we need to talk to you."

Media Efforts

- SCE issued a press release to the local media shortly before deployment in every community that received the new meters.

- Oncor was able to better address customer concerns when they were more proactive with correcting and educating the media.

- SDG&E and CPE actively monitored traditional and social media sites for issues and addressed them directly as they arose.

- After re-vamping its communications strategy in 2010, PG&E started using several media outlets including broadcast, newspapers, social media and bus station kiosks for its "advanced meter" (and subsequently grid modernization) communications

C. Objective

The **objectives** of the Education and Outreach Plan are to:

- Provide customers with practical instruction, analysis, and information to enable and encourage customers to capture economic benefits as quickly as possible, especially to produce immediate bill savings to customers.

- Provide customers with the information that will help them capture value from the AMI deployment

- Enhance the customer experience by providing actionable information, easy access to information, and simple enrollment in pricing programs such as (PTR and RRTP)

To support these objectives ComEd will increase customers' awareness, acceptance and engagement in the AMI deployment initiative through education and outreach activities employing targeted messages throughout the implementation.

D. Strategy

To support the objectives stated earlier, several strategies will be utilized based on audience and the implementation cycle. Methods will be aligned with audience specific strategies. Strategies will drive the selection of which methods should be utilized, to which audience, and at what time based on the customers' knowledge of advanced meters.

1. Core Strategies

- Build awareness of the value and benefits of advanced meter deployment among customers.

- Inform about benefits of advanced meters and pricing programs (such as PTR and RRTP).

- Educate to ensure that customers understand how to manage energy from advanced meters.

    - Focus customer education on specific actions customers with AMI meters can take to realize economic benefits from AMI meters (e.g., how to use the meter's capabilities) and actions that customers without meters can take to offset their AMI-related charges while awaiting AMI meter installation. Customer education content will include specific information on how customer can use their AMI data to produce immediate bill savings.

- Increase engagement with planned implementation activities.

- Collaborate with community leaders to ensure customers are engaging in PTR and RRTP

2. Guiding Principles

The following guiding principles apply to residential and small business customers, and are based on what we have learned from our benchmarking and discussions with other utilities and independent parties.

- **Build Relationships to Facilitate Engagement** – Establish platforms for ongoing dialogue to ensure that customers are aware of the **AMI deployment.**

- **Gain Customer Acceptance** –Through collaborative work with stakeholders, improve customer utilization and acceptance.

- **Tap into the Power of Community** – Understand the power of human social networks. Personal learning comes through communication with friends, neighbors and coworkers.

- **Commit to Creating Mutually Beneficial Outcomes** – Build "what's in it for me" messages to ensure that we are focusing on customer's needs.

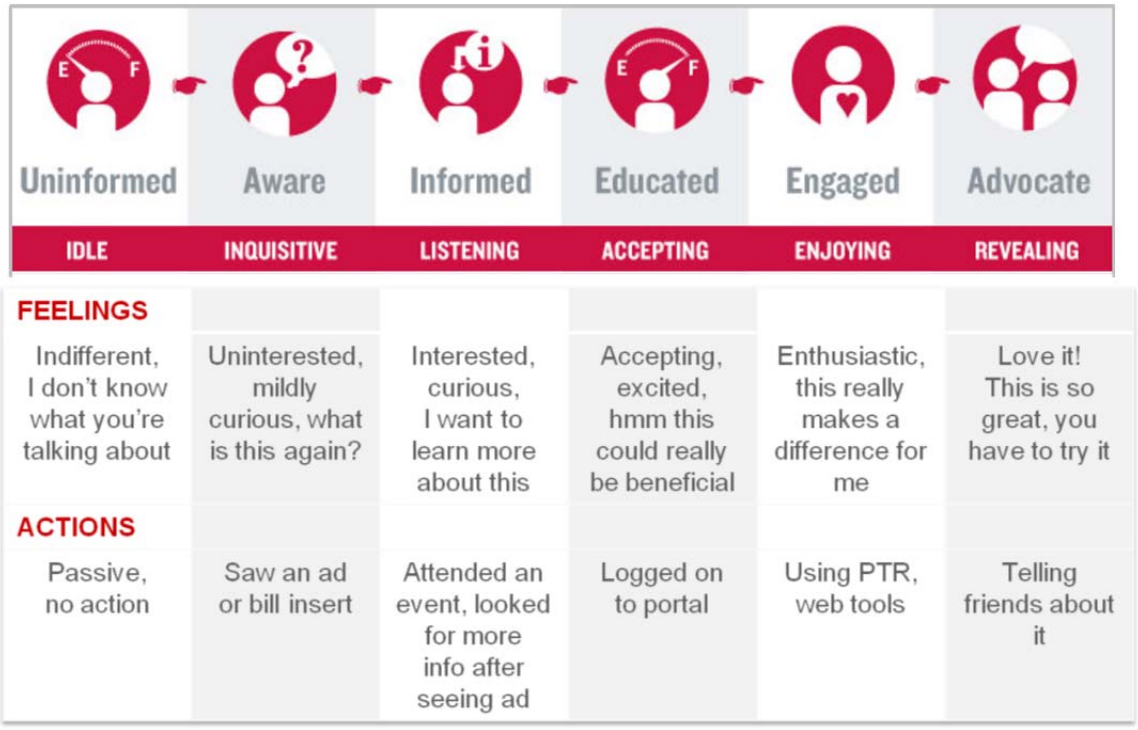
- **Demonstrate Responsiveness** – Be transparent through continual education and information provided to customers and communities.

- **Proactively and Responsibly Engage** –Provide information on potential issues that may arise and suggested responses to external facing teams, employees, community leaders and organizations.

- **Meet People Where They Are** – Don't wait for customers to connect, rather, take AMI deployment information to them to effortlessly take them on the journey leading to engagement and advocacy.

- **Be Open to Feedback and Continued Improvement –** Expect requests for communication and process improvements, and be flexible to accommodate continual change.

3. Customer Journey



Uninformed	Aware	Informed	Educated	Engaged	Advocate
IDLE	INQUISITIVE	LISTENING	ACCEPTING	ENJOYING	REVEALING
FEELINGS					
Indifferent, I don't know what you're talking about	Uninterested, mildly curious, what is this again?	Interested, curious, I want to learn more about this	Accepting, excited, hmm this could really be beneficial	Enthusiastic, this really makes a difference for me	Love it! This is so great, you have to try it
ACTIONS					
Passive, no action	Saw an ad or bill insert	Attended an event, looked for more info after seeing ad	Logged on to portal	Using PTR, web tools	Telling friends about it

A customer journey is an illustration of the steps customers experience in engaging with a company, whether it is a product, an experience, or a service. Sometimes customer journeys are "cradle to grave" looking at the entire arc of engagement. At other times, customer journeys are used to look at very specific customer-company interactions (for example, the purchase of an iPad™). We have developed a customer journey for ComEd's AMI deployment initiative. As advanced meters are deployed by city and neighborhood, ComEd will take customers through a journey that seeks to build awareness, strengthen understanding, engage through participation and collaborate with community leaders to ensure customers are engaging in mutually beneficial programs facilitated by advanced meters, like RRTP and PTR, or other pricing programs delivered by a RES. Not every customer will complete the entire journey. In some cases simple neutrality or indifference will be as far as some customers are able to move. However, we would like as many customers as possible to move through most steps on the journey through participation in programs facilitated by advanced meters over ten years. The goal of the journey is to demonstrate value and enhance the customer experience. Through the journey the customer will see the growth of local business and innovative new products and services such as new pricing programs.

4. Customer-Specific Strategies

- Utilize a phased communication approach so that customers receive relevant information when it counts; customers are most often responsive when they receive information that they can immediately act on.

  - Incorporate customer behavioral and demographic data points to target messaging; not all customers have the same concerns about advanced meters.

- Foster customer goodwill through community outreach, environmental events, and partnering with trusted community groups.

- Set clear expectations about what customers can expect through a steady feed of relevant news and information.

- Leverage public influencers to deliver messages to constituents.

  - Partner with local community organizations and advocacy groups to communicate the grid modernization messages and to provide trusted third parties as additional voices. Work with the public influencers to educate customers on smart meters, pricing programs and tools to reduce energy use and cost

- Customize education to focus on key customer segments based on available demographic data.

  - Deliver low-income education and support programs to help seniors and economically disadvantaged understand how to manage energy effectively using smart meters and pricing programs (such as RRTP and PTR)

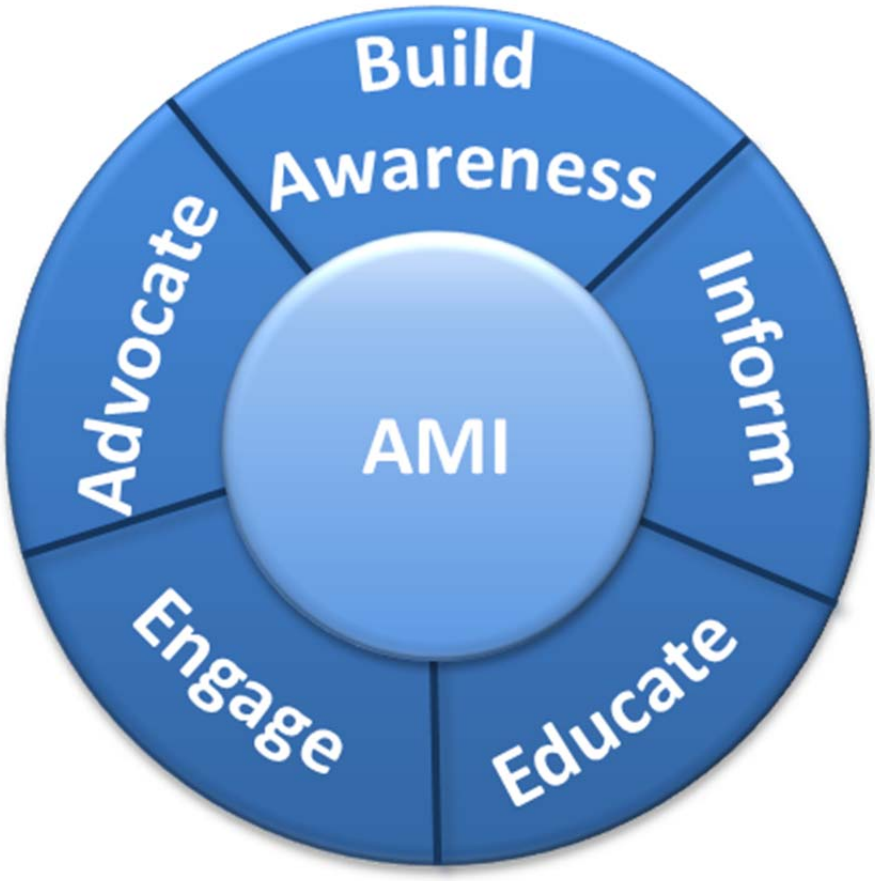
  - Because some customers may not have access to a computer and / or internet access, ComEd is exploring the ability to also facilitate information and data access through personal mobile devices, which may provide less expensive internet access for customers most in need of savings opportunities, by incorporating internet applications that accommodate use of smart phones or other mobile devices.

  - Further, for customers who may not have means to receive information through electronic channels, ComEd will facilitate information and data access through face to face communications. That will be done with the Speakers Bureau, teacher partnerships, small business neighborhood canvases, and outreach through faith-based and environmental non-profits. Each of these programs is described in more detail below in section I(6).

  - Make sure that education regarding cost savings under AMI is reaching all customers including low-income customers participating in PIPP, LIHEAP or a DPA. Include education around PTR, RRTP and web tools. If a TOU rate becomes available in the future, ComEd will also include that tariff in its education efforts. How ComEd will educate customers is detailed below in subsection F under the marketing campaign for low income and senior customers. How ComEd will measure the effectiveness of these education efforts is described in subsection J.

- Utilize traditional (out-of-door, print and online media, public relations), non-traditional (grassroots, community events, social media) and one-to-one channels (direct mail and email) to reach customers throughout the communication cycle.

The communication wheel below illustrates the core strategies and how they will be implemented at each stage of deployment. As this plan is further developed, additional sections will be added to the wheel to illustrate how each component of the plan ties together.



E. Audiences

The objective of the customer education and outreach plan will be realized through strategies tied to specific residential and small business audiences. The audiences will be approached based on their current state of understanding, their interest in further education, and their receptivity to engage and realize the benefits of advanced meters. This section will describe

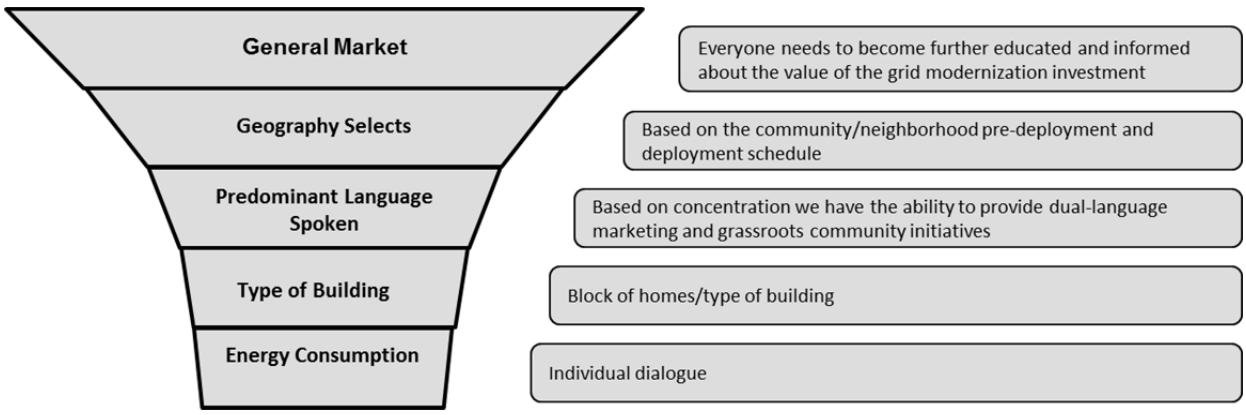
how ComEd plans to utilize the current data available on our customers, and the behavioral data that will be available in the future, to target outreach and education efforts.

Audience Approach

The customer journey overlaps with the operational and implementation activities that customers will experience. Regardless of who the customer is, where they live and how they consume energy, they need to hear the same basic, informational messages at the beginning of the program touching their community.

ComEd will differentiate the audiences based on geographic and demographic data. ComEd will test the effectiveness of utilizing various data or different segments to target communications at each phase of the customer's journey. What works in traditional energy efficiency education and outreach may not be as effective with this plan due to the diversity of the customer base and the complexity of tailoring messaging to different customer segments. In addition, ComEd will consider the fact that all customers will eventually have an advanced digital meter and many will experience a lag time between messaging and meter deployment over a 10-year deployment schedule.

The approach that will be used to define audiences and link the tactical marketing plan can be visualized as a funnel and supported by the readily available internal data. The graphic shown below is for illustrative purposes only, and suggests a way available data will be used to target communications.



Readily Available Data for Initial Audience Segments

The table below provides a partial listing of readily available data that can be captured from internal database systems and then overlaid with geographic information in the advanced meter deployment plan. This data will allow for a deeper understanding of customers' experiences with ComEd, particularly with energy usage, bill payment and power outage experiences. The following information will likely be used for the initial audience segmentation for both residential and business customers.

Data from Internal Systems	
Residential Customers	Business Customers
• **Address** • **Single Family / Multi-Family** • **kWh Usage**	• **Address** • **kWh Usage**

F. Low Income Customer Assistance Programs

The data and programs provided by AMI meters have the potential to change the way we relate with customers who are on the verge of disconnection by helping them reduce their energy consumption. However if customers find themselves experiencing a hardship, there are customer assistance programs for low-income customers for the primary purpose of avoiding imminent disconnection.

ComEd will provide $10M per year for five years pursuant to Section 16-108.5(b-10) to fund low income programs which are listed below. These programs will be designed to assist customers who are either in arrearages or who are about to be disconnected, as well as customers who have been disconnected. The allocation for the $10M for these programs in 2012 is expected to be as follows:

- $8M for Residential Special Hardship: This program will Program will provide relief to the customers who need it most by assisting them to regaining the ability to manage their electricity bills successfully. Eligible[46] residential customers who are experiencing a hardship (senior hardship, job loss, medical issue, etc) can receive a grant of up to $500 each. ComEd will educate customers about no-cost and low-cost ways they can decrease their future electric bills.

- $1M for Non-Profit Special Hardship: This program will focus on assisting non-profit organizations in need that provide basic life needs (senior centers, homeless shelters, Veteran organizations). A requirement to participate will include participating in energy management education.

- $0.5M for C.H.A.M.P. (ComEd Helps Active Military Personnel); This program serves our nation's active military, and veterans (including disabled veterans) experiencing a hardship. Grants up to $1000 and/or various other benefits (deposit refund, late payment charges waived etc). We will identify and partner with military organizations, such as the American Legion and Marine Corps League that have existing touch points and utilize their communication channels to reach eligible customers. We will use a channel mix of marketing and communications to increase program awareness and enrollment. Methods will include: newsletter content, brochures, posters/counter cards, fact sheets, email

[46] Customers eligible if income is at or below 250% of poverty level ($57,625 for family of four), and if they are not PIPP participants. LIHEAP customers are eligible for grants *after* LIHEAP funds have been applied.

templates, talking points and events. These methods will also provide information about no-cost and low-cost ways to decrease future electric bills

- $0.25M for Educational Classes: ComEd will conduct first time homebuyer classes through the Chicago Urban League and LUCHA organizations. In addition, non-profit energy management education will be developed and implemented with CNT.

- $0.25M for Outreach and Marketing: Outreach will entail targeted participation with a variety of communities. This includes the following: participation in Energy Fairs with LIHEAP, participation in local community events, Energy Fairs participation with local community agencies, partnerships or pilots with local housing authorities to target senior population on energy management. Specifically ComEd will expand the outreach efforts to include the City of Chicago Department of Aging. For marketing, traditional communications methods to include: general and minority market radio, press conferences in key communities & news releases, face book & twitter, ComEd CARE website, a monthly fact sheet and a program fact sheet for community distribution in municipalities and with legislators.

In addition, the statutorily-authorized Percentage of Income Payment Plan ("PIPP") will be available to an estimated 260,000 of ComEd's low income customers.

- The PIPP is administered by the Department of Commerce and Economic Opportunity ("DCEO") who also administers the Low Income Home Energy Assistance Program ("LIHEAP").

- PIPP is designed to attempt to change and reward the good payment behavior of low-income customers with program participants paying no more than 6% of their income for home energy charges. Each customer can receive up to $1,800 in energy assistance benefits per year.

- DCEO subsidizes a participant's remaining service charges year-round with funding from State and Federal Appropriations. The State component is partially funded through the Supplemental Low-Income Energy Assistance Fund, a component of the ComEd customer charge.

- PIPP includes an Arrearage Reduction Program (ARP) component that rewards participants for regular, on-time bill payments – "arrearage forgiveness". This results in a 1/12 credit toward pre-program arrears for each on-time monthly payment up to $1,000 per year for each utility. ARP is limited to maximum funds available per utility. In addition, Section 16-108.5(b-10) funds will be used to assist customers in arrearages.

In order to proactively provide for the foreseeable effects on low-income customers from increased disconnections for nonpayment in an effective and focused manner, the following enhanced communication methods will be available for low income customers:

- **CARE** – ComEd will add reference to the availability of the customer assistance programs in existing outgoing collection activity communication channels. The enhanced communication will direct customers to ComEd.com/CARE or to call ComEd's CARE hotline at 888-806-2273:

- **Proactive Call** – ComEd will change the call message script on the existing proactive calls to state the availability of customer assistance programs, including LIHEAP, PIPP, and Residential Special Hardship.

- **Written Disconnection Notice** – While the current disconnection notice does mention the availability of Customer Assistance Programs, the reference to the programs will be modified to include the website and CARE hotline phone number to use to apply for the programs. Additionally, ComEd will improve the visibility of this language on the disconnection notice.

- **Field Notification Call** – ComEd will change the call message script on the field notification calls to identify the availability of customer assistance programs, including LIHEAP, PIPP, and Residential Special Hardship.

- **Municipal Notification** – ComEd will notify the City of Chicago and other municipalities of impending disconnections on a zip code (or comparable) basis after developing a business process to accomplish same, as permitted by customer information privacy constraints. ComEd is currently exploring its capability to report impending service disconnection information on a zip code by zip code basis. ComEd will solicit input from the City of Chicago and other municipalities on a new process to provide notice of disconnection of customers for nonpayment on a geographic basis for customers who have received an AMI meter, as permitted by customer information privacy constraints.

The company will take the following actions to enhance communication for situations where the customer contacts ComEd:

- **Phone Greeting:** The Call Center and Revenue Management will work together to determine how the IVR and CSR call scripts could be altered to better proactively provide customer assistance information over the phone to customers in credit distress, including communication regarding the availability of LIHEAP, PIPP, and Residential Special Hardship.

- **Web:** Customer Operations will change existing web messaging to better emphasize the availability of customer assistance programs, including PIPP, LIHEAP, and Residential Special Hardship.

ComEd will also coordinate with social service agencies, local governments and other sources of customer assistance via the following:

- ComEd Customer Assistance has engaged and will continue to engage the following organizations in discussion to develop the Customer Assistance Program guidelines (i.e., customer eligibility, program design, timing of program rollout, etc.):

    - DCEO
    - Housing Authorities (CHA, Aurora, Rockford, Metropolitan, Kankakee)
    - CNT Energy

Additionally, Customer Assistance has engaged and will continue to engage in the following outreach efforts in connection with the availability of assistance programs:

- ComEd held media awareness events in Chicago, Rockford and Will County

- In partnership with Ameren and DCEO, ComEd participated in the Housing Authority Conference held April 2012 for the purpose of providing Customer Assistance information

- Program information English/Spanish has been shared with the Chicago Housing Authority for distribution to their residents

- ComEd will be hosting a senior night in Saratoga Towers (Kendall-Grundy) with participants receiving Customer Assistance Program information, energy efficiency information, and entertainment

- Customer Assistance, Marketing, Corporate and Communications are coordinating efforts to provide Customer Assistance program and energy efficiency information to seniors through the meals on wheels program throughout the territory (Dept of Aging)

- LAA's will receive energy efficiency packets via a marketing drop shipment. Customers applying for Residential Special Hardship will be provided with a packet for their use.

- External Affairs will work with United Way to distribute information regarding the Non-Profit Special Hardship program.

- Coordinating a conference with St Vincent De Paul, Lake County LAA and Lake County Housing authority to align efforts to get information to customers seeking assistance.

- The Customer Assistance team participated in the Welcome Home Celebration for Military Veterans in May. CHAMP information was distributed along with giveaways for military families

The marketing plan for low income and senior populations will also include energy management to help customers manage and reduce their energy usage.

- As part of the promotion on CARE, ComEd will educate low income customers on energy management providing customers with information to help them lower their