WG4 REPORT INITIAL DRAFT1A

1. Introduction
	1. Customers are the end users of the energy system and communities are the human networks tying them together. A household or business may be a member of multiple communities – each based on different characteristics such as categories of geography (urban, suburban, rural), residence in a specific town, city or neighborhood, household income level, ethnicity, religion, vocation, age, other demographic characteristics, as well as interests, activities, views and orientations. All communities depend on electricity to enable the functionalities of modern life: lighting, heating, cooling, communications, appliances, production of goods and services, and now vehicular travel, connectivity, and mobile information.
	2. The key word in “Customer and Community Participation” is the last one. Illinois energy policy should empower those who choose to participate in tomorrow’s energy opportunities, and use new technologies to leverage system benefits, while maintaining accessible and affordable electric service for all. [*Perhaps we can begin with such a simple statement of principle that WG4 members can agree on?]*
	3. Scope of work

Customers make individual choices about technology, energy sources, uses, and pricing plans. Customers and communities are affected not only by our own choices and behaviors but by the countless decisions and actions of all consumers and producers connected to the integrated grid. This WG4 report examines issues raised by the changing array of participation options, how they interact and how they can be optimized for individual, community, and system benefit.

* 1. Topics

Instead of delving deeply into the capabilities of new technologies (which are addressed by WG1), this report examines the different ways that groups of customers and communities are participating in the evolving energy marketplace and explores what customer-friendly and community-friendly policies and options might look like in an interconnected world of Distributed Energy Resources (DER), granular data, and electrification. The topics covered by WG4 include consumer engagement, education and empowerment, retail market opportunities and challenges, electricity market transformation, the changing roles of utilities and other entities, options for electricity pricing, opportunities and challenges of DER and transportation electrification, the needs of low and moderate income (LMI) customers and he perspective of large industrial customers. The diverse opinions of stakeholders and proposals to address key issues are described for each topic.

* 1. Key findings and recommendations
	2. *[DESCRIPTION OF KEY FINDINGS AS PER STAKEHOLDERS – START WITH LIST OF AGREED UPON STATEMENTS OF FACTS, VALUES, PHILOSOPHY OR GOALS/OBJECTIVES (ARE THERE ANY??)]*
	3. areas of agreement/disagreement;
		1. Stakeholder participants in WG4 have a range of views about the role of regulation, public utilities, and public policy in the NextGrid era. Some believe that competitive markets can always be relied on to produce innovative products and services at the lowest possible cost. In this view there is little need for utility or regulatory involvement in markets except to promote their unfettered development.
		2. Others believe that delivering the benefits of new technology to customers and communities requires policy makers to set public interest objectives and orient markets and monopoly utilities to support them. In this view electricity market competition is valuable within a policy framework intended to protect consumers and ensure positive community outcomes.
		3. All stakeholders agree that tomorrow’s energy landscape should be centered on customer choice but they have different conceptions of what that means for regulatory policy. For some it means to open retail energy markets to competitive providers and ensure a level playing field by prohibiting utility participation. For others, customer choice means that an array of options should be available from the utility, which is transparent and accountable through the regulatory process.
		4. These positions often coincide with differing perspectives on utility spending and investment. From one point of view, utility activities should be directed solely at provision of safe and reliable delivery service, and all expenditures should be proven reasonable in post hoc regulatory cases before being recoverable in rates. Others believe that the public interest is served when utilities are motivated to invest in new technology that can achieve policy objectives such as improved reliability and asset utilization, greater use of renewable energy, higher energy efficiency, and long-run cost savings. From this view, regulation should attempt to align utility and customer interests to create “win-win” outcomes, including pre-approval of investment determined to be in the public interest that would not be undertaken by the utility if exposed to recovery risk.
	4. Key questions needing further study and investigation
	5. All issues considered by WG4 need further study and investigation by regulators and policy makers because they are crucial to the state’s energy future. These include:
	6. *This one*
	7. *That one*
	8. *The other one*

*[unless members have good ideas here i would not include THIS section - mrc]*

1. Topic: Role of Customers and Communities in Shaping the Energy System
	1. Types of Customers: ComEd and Ameren serve a total of 5.1 million customers, amounting to 90% of the state’s electricity end-users.[[1]](#footnote-1) YYYYYYY of these customers are residential, AAAAAA are commercial, and BBBBB are industrial. A typical residential customer uses XXX kWh annually, whereas a large industrial customer may use upwards of XXXXXX kWh. Total energy consumption by volume is fairly evenly split between the classes – XX% residential, XX% commercial, and XX% industrial.[[2]](#footnote-2) *THESE STATS MAY BE INCLUDED IN THE INTRO CHAPTER AND NOT NEEDED HERE*
	2. Cost of service studies – always contested and subject to regulatory judgement – are the basis for triennial cases to set rate design and interclass allocation of the utility revenue requirement, which changes annually based on a formula included in the EIMA legislation. [Note: Ratemaking issues are addressed by WG7]. Each customer class is divided into subclasses for the purpose of intra-class cost allocation and ratemaking. The residential class is split between multi-unit and single-family dwellings, and further distinguished by whether or not the customer has all-electric space heat. Intra-class rates are intended to allocate costs fairly and accurately, e.g., taking into account that a multi-unit building can often be served by a single service drop, and that heating usage peaks at night in the winter when the system has ample capacity.
	3. Commercial and industrial customers are segmented into rate classes based on their usage. Commercial customers with monthly volumetric usage of less than XXXX kWh are billed on a fixed-fee-plus-usage basis, much like residential customers, whereas larger C&I customers pay a significant portion of their delivery service fees based on their measured peak load each month (the “demand charge”). The charges per kw of demand change with the size of the customer, and there are XX sub-classes of C&I customers, each with a defined load range. (Ratemaking is the subject of WG7).
	4. [*WHAT MORE DO WE WANT TO INCLUDE ABOUT TYPES OF CUSTOMERS AND LOADS?]*
2. Topic: Evolving Uses and Goals of Electric Service Regulation
	1. In the 125 years since the 1893 Chicago World’s Fair astonished people with its electric lighting, the consumer uses of electricity evolved from lighting to motors and appliances, to heating, air-conditioning, television, and finally computers, smartphones – and all the other devices that have become essential to a modern lifestyle. Cars, trucks and buses are the next step in lifestyle electrification, perhaps followed soon by “self-driving” autonomous electric vehicles. On the supply side, large central station power plants are facing competition from small-scale distributed generators like rooftop solar power, which increasingly may be paired with energy storage as that technology improves in performance and declines in cost.
	2. Service Objectives: The traditional goals of safe, reliable, and affordable electricity have evolved to include environmental sustainability (i.e., reduced pollution and carbon emissions). Smart grid and advanced technology deployment have meant improvement in the key metrics of frequency and duration of outages for ComEd [*AND AMEREN?]* in each of the five years since AMI deployment began.[[3]](#footnote-3) Energy efficiency is part of the new set of social goals and regulatory requirements. Using less energy means lower bills for consumers, but it raises questions about how to equitably allocate and pay for the costs of maintaining, operating and upgrading the grid which do not decline with lower usage.
	3. Evolving New Objectives: Choice, Control, Manageability, Responsiveness

Restructuring the Illinois electric industry introduced competition and made customer choice a new regulatory goal. Technology innovation and market evolution have been key drivers of burgeoning opportunities for energy management. Deployment of AMI is providing data to enable new rate, service, and control options at the same time as customer uses of electricity are expanding and expectations for service quality and energy options are growing. As will be discussed in this report, flexible responsiveness by regulators, utilities, and third-party providers to the changing needs and desires of consumers will be essential to optimizing the customer energy experience and achieving the social goals of Illinois energy policy.

1. Statutory Policy Objectives
	1. The specific policy goals of Illinois regulation are laid out in the legislative findings at the beginning of the Public Utilities Act:

 *(220 ILCS 5/1-102) (from Ch. 111 2/3, par. 1-102)*

 *Sec. 1-102. Findings and Intent. The General Assembly finds that the health, welfare and prosperity of all Illinois citizens require the provision of adequate, efficient, reliable, environmentally safe and least-cost public utility services at prices which accurately reflect the long-term cost of such services and which are equitable to all citizens. It is therefore declared to be the policy of the State that public utilities shall continue to be regulated effectively and comprehensively. It is further declared that the goals and objectives of such regulation shall be to ensure*

 *(a) Efficiency: the provision of reliable energy services at the least possible cost to the citizens of the State; in such manner that:*

 *(i) physical, human and financial resources are allocated efficiently;*

 *(ii) all supply and demand options are considered and evaluated using comparable terms and methods in order to determine how utilities shall meet their customers' demands for public utility services at the least cost;*

 *(iii) utilities are allowed a sufficient return on investment so as to enable them to attract capital in financial markets at competitive rates;*

 *(iv) tariff rates for the sale of various public utility services are authorized such that they accurately reflect the cost of delivering those services and allow utilities to recover the total costs prudently and reasonably incurred;*

 *(v) variation in costs by customer class and time of use is taken into consideration in authorizing rates for each class.*

 *(b) Environmental Quality: the protection of the environment from the adverse external costs of public utility services so that*

 *(i) environmental costs of proposed actions having a significant impact on the environment and the environmental impact of the alternatives are identified, documented and considered in the regulatory process;*

 *(ii) the prudently and reasonably incurred costs of environmental controls are recovered.*

 *(c) Reliability: the ability of utilities to provide consumers with public utility services under varying demand conditions in such manner that suppliers of public utility services are able to provide service at varying levels of economic reliability giving appropriate consideration to the costs likely to be incurred as a result of service interruptions, and to the costs of increasing or maintaining current levels of reliability consistent with commitments to consumers.*

 *(d) Equity: the fair treatment of consumers and investors in order that*

 *(i) the public health, safety and welfare shall be protected;*

 *(ii) the application of rates is based on public understandability and acceptance of the reasonableness of the rate structure and level;*

 *(iii) the cost of supplying public utility services is allocated to those who cause the costs to be incurred;*

 *(iv) if factors other than cost of service are considered in regulatory decisions, the rationale for these actions is set forth;*

 *(v) regulation allows for orderly transition periods to accommodate changes in public utility service markets;*

 *(vi) regulation does not result in undue or sustained adverse impact on utility earnings;*

 *(vii) the impacts of regulatory actions on all sectors of the State are carefully weighed;*

 *(viii) the rates for utility services are affordable and therefore preserve the availability of such services to all citizens*.

* 1. Passage of state laws including the Future Energy Jobs Act (FEJA) (2016) and the Energy Infrastructure Modernization Act (EIMA) (2011) have added new findings and ratemaking methods but have not changed these core statutory goals. Different stakeholders emphasize different elements of the legislative findings and it is the job of the Illinois Commerce Commission to interpret their guidance in regulatory proceedings. Sometimes these objectives may appear to conflict, such as the requirements that rates be affordable and universally available, while costs are allocated to cost causers and utilities are allowed to recover all prudently incurred reasonable costs and a sufficient return on investment. Balancing these goals to ensure outcomes in the public interest is at the core of the regulatory mission, which will become more complex in the NextGrid era.
	2. Questions for Regulatory Policy Consideration

The NextGrid process is not an exercise in relitigating issues that have been settled by regulatory decisions or legislative actions, but rather is an effort to identify and elucidate future issues in a rapidly evolving energy environment. With regard to the core elements of regulatory policy affecting customers and communities in an era of changing technology and priorities, key questions raised for policy makers include:

* + 1. Should state regulatory policy goals be expanded to include reduction of carbon emissions?
		2. What new policies, if any, are needed to assure easy and timely interconnection for behind-the-meter DER?
		3. What new polices, if any, are needed to promote vigorous price-constraining competition for energy products and services?
		4. What new polices, if any, are needed to protect consumers from fraudulent behavior by unregulated energy product and service providers?
		5. What new policies, if any, are needed to fairly allocate costs among customer classes and address the possibility of uneconomic bypass?
		6. What new policies, if any, are needed to improve reliability and customer satisfaction, such as greater undergrounding of distribution wires?
		7. What new policies, if any, are needed to ensure the benefits of utility investment in new technologies flow to all customers and communities?
		8. What new policies, if any, are needed to provide to customers the full range of choices and services enabled by new technology?
		9. What new policies, if any, are needed to provide LMI customers with new technology options?
		10. What new policies, if any, are needed to ensure energy affordability for LMI customers?
		11. What new policies, if any, are needed for utilities to flexibly respond to changes in customer requirements and expectations?
		12. What new policies, if any, are needed to allow utilities to respond to potential grid defection?

*[OTHER QUESTIONS TO BE ADDED?]*

1. Topic: Empowering Consumers to Make Energy-Smart Choices to Advance Customer and Community Objectives
	1. Intro

Participation: For the first century of society’s electrification, almost all electricity resources were centralized and owned by the monopoly utility. Electrification meant extending the grid to places it had never been and displacing inferior technologies like gas lighting. From most consumers’ points of view, the only data that mattered was the amount of the monthly bill and the only thing a residential customer had to know was how to turn the switch on and off and never to touch live wires. Choices were few and nobody spent much time on energy management. Demand was seen as inelastic and the main question was how fast to expand the system to meet ever growing loads. People noticed when their bills went up to pay for new capacity and growing usage but otherwise most small volume customers didn’t think much about electricity. This was the paradigm for the first 100 years of electricity consumption.

Evolving Priorities and Expectations: Stakeholder views are varied as to what today’s consumers want from their energy providers. Some believe that customers’ desires have not changed and are not likely to: they want the utility to provide low-cost reliable electricity and don’t want to be bothered with information or be asked to make choices. Others believe that, spurred by concerns about pollution, climate change, resource depletion, and the opportunity to reduce personal energy costs, consumers are ripe for a change in energy consciousness and behaviors. From this perspective, customers will be responsive and engageable when they become familiar with how they can benefit from AMI-enabled options and new technologies like electric vehicles, provided they understand and trust the information and it is easily actionable. A familiar example of the way innovative products can shape demand is that people didn’t know they wanted a smart phone until they had one.

Customer Engagement: For consumers to derive full value from their energy options first requires that they understand them sufficiently to make good choices. That’s why a crucial ongoing task in the NextGrid era for utilities, regulators, advocates and other stakeholders will be to successfully engage customers, educate them about their rate, product, and service options, and nudge them to make choices that suit their own needs and preferences and support system benefits. Future utility customer satisfaction may depend not just on provision of reliable and affordable service, but on utilities being able to offer a customer experience that meets the expectations of consumers in the Amazon era.

* 1. Utilities are changing in the face of new technologies, evolving regulatory goals, and increasing customer expectations. No longer just the network provider and system operator, the utility’s responsibility for improving the reliability, efficiency, affordability and accessibility of its services now means it must engage and educate customers, provide information and usage data to help them manage consumption and reduce bills, and offer new options to achieve broader regulatory and social goals.

The utility is a key repository of information customers need to help make smart energy choices. Because the utility generally is not benefited or harmed by these choices and is subject to regulatory oversight, it may be seen by customers as an unbiased and trustworthy information source. There are also many other good sources of energy information, including trusted individuals, community groups, institutions, and suppliers of energy products and services. Under a provision of EIMA, ComEd and Ameren fund the Illinois Science and Energy Innovation Foundation, which was created by the General Assembly to inform and engage Illinois consumers in the transformation to a digital electric grid.

* 1. Full deployment of AMI means that detailed usage data will be available for each customer, opening up options for analysis and optimized energy management to benefit the individual and the system. Personalized service and product options may become the norm for utilities, assuming regulatory rules encourage this role. If so, customer engagement will become more proactive and individualized, using channels preferred by the customer.
	2. The articulated goals of Illinois utilities reflect this evolution. ComEd has developed a goal of delivering what it calls the “Premier Customer Experience” – personalized service that is simple and automated, transparent and understandable, flexible to suit the customer’s preferences, proactive in anticipating issues before they arise, and responsive to customer needs. The company is deploying new online smart-meter-enabled tools to organize and present data that customers can use to manage their electricity consumption and their relationship with the utility. Bills have been redesigned and customer messaging has been upgraded to include information such as high bill alerts, power outage information, and peak time savings alerts. These can be accessed via text, email, phone calls and pushed app notifications. All customer information including bill payment and personal profile is available through the ComEd mobile app.

ComEd has become one of the nation’s first utilities to provide access to “Internet of Things” applets that enable automatic response of smart appliances to real time conditions, such as changing the temperature on a smart thermostat when time-variant prices fluctuate or precooling in advance of an expected curtailment event. Also available from the utility is Smart Meter Connected Device (SMCD) service which provides near-real-time usage data and estimated electricity cost information to in-home displays and energy management equipment. However, an initial challenge is that most customers do not yet take advantage of – or even know about – these and other opportunities to use new technology to optimize energy usage and reduce energy bills.

* 1. Ameren Illinois also is redesigning its customer engagement programs to meet the expectations of customers that the utility will provide a personalized experience with timely response to customer preferences and easy access to information used for making choices and managing costs. Using internal and third-party studies, surveys, focus groups, data analytics, and tracking results, the company regularly analyzes its residential customer base to follow the drivers of customer satisfaction and to test the effects of marketing and communication strategies.

Ameren commissioned a study which found that its customer households can generally be grouped into five identified energy demand segments, each with certain characteristics, profiles and priorities, allowing outreach messages to be tailored to meet their concerns and eventually to potentially identify service options that might be best for the customer’s needs and aspirations. Like ComEd, the company continues to expand its online portal to provide customized data to each customer (which, as Ameren is a combined utility, also includes natural gas information).

* 1. Issues/Policy Options for Customer Engagement
		1. *NEED FURTHER MEMBERS INPUT IF THERE ARE ISSUES OR OPTIONS NOT DISCUSSED*
1. Data Access
	1. Introduction/Overview: Upon the completion of AMI deployment, smart meter interval data will be available to all customers. Analysis and utilization of granular data have potential to open up energy opportunities for customers of all sizes. Combined with supply, demand, and control technologies, data allows customers to become grid-interactive participants, rather than passive loads, with more complex but also more manageable energy behaviors. In a not too distant future, a typical household may be producing, storing, managing, buying and selling electricity -- as well as consuming it. But a customer-friendly experience means that all these interactions have to be easy and affordable – few people want to spend more time managing energy and nobody wants to spend more money.
	2. Opportunities and Challenges: AMI data must be accessible to customers and authorized third parties who can analyze it and use it to provide services. Ameren and ComEd have adopted the “Green Button” protocols developed by an industry non-profit group to enable consumers to access their detailed energy usage data in a standardized downloadable format, so they can securely manage their consumption and make better-informed energy decisions.[[4]](#footnote-4) Innovative applications using the Green Button data format have the potential to transform the way people use energy. Analysis of this data by third parties including retail electric suppliers, demand response aggregators, utilities and other service providers could result in customized products and services. Availability of granular usage data for study by academic and non-profit groups could reveal new ways to achieve system benefits and inform consumers of their best options.

Household energy usage data is private and protected under Illinois law. It cannot be released by the utility without authorization by the customer (except as anonymized research data under certain conditions) but the implementation policies are left to the judgement of the ICC. Several cases are at various stages of litigation before the ICC as to what is the required form of authorization and how data is made available. Among the issues addressed by the commission are:

1. whether or not a third party, such as an ARES, can access usage data directly from the utility after being authorized to do so by the customer;
2. the required form of a customer authorization (written, verbal, electronic, wet signature);
3. the required authorization language and disclosure to the customer of how the data will be used;
4. the length of time for authorization to be effective;
5. the rules for non-ARES to access data for other purposes;
6. the restrictions on access to anonymous usage data for research and non-sales purposes;

The details of how customer data is accessed are important because customers are accustomed to a seamless online experience and may be frustrated by a multistep process requiring them to separately visit the sites of utility and a third party in order to investigate service options.

* 1. Further data analytic options: Software is now available to allow utilities to disaggregate electricity usage to the appliance level by applying artificial intelligence to whole-home meter data. This information can be used to help customers understand their electricity consumption and take measures to lower their costs, providing utilities another potential level of personalized customer engagement.
	2. Policy Options/Stakeholder Recommendations re: Data
		+ 1. OpenID Connect for Utilities: In the view of some stakeholders, Green Button Connect, as it is currently implemented, does not provide a simple and positive customer experience and many customers will fail out of onboarding. To give data access to a third-party, a user needs to separately authenticate with a utility website and then be sent back to the third-party site. Many large services with similar sensitive data, such as banking, provide this functionality through OpenID software instead of a user interaction. Employing OpenID would make the experience more user friendly while protecting customer privacy. [[5]](#footnote-5)
			2. Authentication could also be enabled through other OpenID Connect users such as Facebook, Google, and Twitter, which can be used to log on to other sites. This would make the path to data access familiar to customers. OpenID would allow a utility to maintain its brand while giving third parties the ability to provide their users with a better user experience.
			3. Expand data sharing capability: Delivering data in near real-time should be studied and piloted to assess its costs and benefits. Usage data currently is provided to
			4. customer-authorized third parties once per day. This allows the utility to review data for integrity and is in line with the current limitations of utility backend services, which were built for monthly billing. Allowing a utility to offer streams of granular data to third parties in a sandbox (an isolated software testing environment) for a small number of customers would allow developers to experiment with real data and would obviate the need for in-home devices to access it.
			5. Employ disaggregation software in utility energy efficiency programs: As discussed above, new data analytic tools can inform consumers about how energy is being consumed and suggest ways to reduce usage and save money.
1. Role of the Utility, Retail Electric Suppliers and Others in Serving Customers and Communities
	1. Overview: The principle that public policy should seek to maximize customer and system benefits suggests that a positive outcome for consumers must include an array of energy options. While stakeholders share that view, they have widely different perspectives on how to achieve it. In an increasingly electrified world of digitized data and DER, the question of which product, service, and pricing options should be provided to customers by utilities (and how they should be designed), and which should be available only from competitive unregulated providers, is hotly debated. Some stakeholders believe that a utility should be restricted to providing monopoly delivery services, while others want to see a broad range of utility-provided products and services, especially when available market options are limited or non-existent.
	2. Illinois regulatory policy since restructuring of the electric industry in 1997 has promoted the growth of competitive markets as a means to reduce costs and spur innovation. However, stakeholder opinions diverge on the question of whether competitive markets alone can be relied on to provide the products, services and choices that customers want and upon which the benefits of AMI and other investments were premised. Some stakeholders believe it is appropriate and necessary for utilities to “jump start” markets where customer-beneficial options are not appearing in a timely fashion, despite the deployment of technology that customers have paid for.
	3. Many stakeholders also see consumer protection as a critical issue in deregulated markets. The believe that a “buyer beware” market is dangerous for an essential service like electricity, particularly when the choices are not well understood by consumers and the consequences of mistakes can be severe.
	4. Retail Supply Competition

Overview/Background: Retail choice of supplier by individual residential customers began in 2002 but did not result in significant movement to alternative suppliers until after the implementation of Utility Consolidated Billing and Purchase of Receivables in 2009.[[6]](#footnote-6) Under these statutory mandates, ComEd and Ameren became the billers and collectors for registered ARES, eliminating both the alternative providers’ cost of billing their customers and their risk of uncollectibles, which became socialized among all utility customers. These provisions were essential for ARES to enter the retail supply market but it was not until the passage of “municipal aggregation” legislation in 2009 that they gained a foothold. That law allowed towns, cities and counties to pass ordinances and referenda to authorize the governmental unit to choose the default provider of electricity supply for their residents and small businesses. Individuals could opt out of municipal aggregation and choose their own supplier or remain with the utility. Few did so because the municipal aggregation contracts generally provided a lower price. This cost savings was due to the fact that the 2007 law establishing the Illinois Power Agency included long-term power contracts with utility-affiliated generators intended to stabilize retail energy rates. When a conflux of events, including the economic downturn of 2008, the emergence of low-cost new sources of natural gas, and the growth of wind power, caused wholesale market energy prices to fall, the higher-priced long-term contracts for a large portion of utility-supplied power meant there was “headroom” for suppliers to bid against the utility price. At its peak in 2013, three out of four customers were served through municipal aggregations, but when the above-market utility supply contracts expired in 2012 and 2013, ARES’ cost advantage evaporated. Since then, 31% of communities did not renew their municipal supply contracts (including Chicago) and the percentage of customers taking ARES service through municipal aggregation fell to 20% in 2017.[[7]](#footnote-7)

ARES now largely focus their attention on marketing to individual customers, and the 73 ARES operating in the ComEd service territory and 37 in Ameren territory have achieved combined market share of approximately 18%. However, it has proven very difficult for retailers to beat the flat rate price of utility supply derived from competitive wholesale bidding conducted under IPA procurement plans, particularly since retailers must cover their marketing and administrative costs, plus earn a profit, whereas the law provides that utility supply is offered with no markup. ARES differentiate some of their products from utility supply by offering longer fixed price commitments or such offers as lower introductory rates, premiums, or purchase of renewable energy certificates beyond statutory RPS requirements. ARES assert that because they operate in a competitive market, they must be responsive to consumer needs and preferences. ARES say they eventually will offer products and services beyond commodity energy, such as energy management tools, if customers want them, and they intend to offer innovative time-variant products after rollout of AMI is complete and data access issues are resolved.

ARES assert that utilities and retail suppliers should have complementary roles in serving customers, with utilities providing delivery and billing services, real-time access to smart meter data, RTO settlement on capacity and energy charges, and third-party access to rebate incentives and utility programs, while ARES sell customers competitive product and service bundles. However, consumer advocates point out that in the 16 years since being invited to enter the Illinois market, with few exceptions ARES have offered largely undifferentiated commodity energy at relatively high prices instead of innovative packages of energy products and services.

The Citizens Utility Board (CUB), Illinois’ statutory consumer advocate, tracks offers and prices of ARES supply products, which vary in terms of fixed or variable prices, length of commitment, and other terms and conditions. CUB has found that of XXX ARES offers since 20XX, YY% resulted in higher consumer costs than utility supply – some as much as ZZ% higher. This fact has been borne out by the ICC’s Office of Retail Market Development, which calculated in its 2018 Annual Report that in 2017 ARES customers paid a cumulative total of $227.6M more than they would have paid on ComEd and Ameren supply (and a total of $551M more over three years).

* 1. Retail Energy Market Issues
	2. The retail electricity market in Illinois has been hindered not only by its inability to deliver customer savings or innovative products, but by the false and misleading marketing campaigns of some ARES, which have tarnished the industry and harmed customers. This market is difficult to police, in part because solicitations are often conducted by ARES agents using telemarketing and door-to-door sales techniques. Solicitations have included false claims of bill savings, false description of the billing elements, false association of the supplier with the utility, selling at higher than published rates, falsely stating or implying that a customer is required to make a choice, short-term “teaser” rates that jump after several months, inflating the price of green energy offers far beyond the incremental cost of purchasing RECs, and targeting vulnerable populations such as elderly, non‐English speaking, and low-income households. The Attorney General, CUB and the ICC have received numerous consumer complaints (NUMBER??) and taken action against several marketers; however, the fraudulent practices continue.
	3. Analysis of the problems in the retail energy supply market is a useful first step in considering improved ways to protect consumers from abusive marketing and products, promote effective competition, provide an array of choices, and achieve the social goals of energy regulation. Creating a healthy and consumer-friendly competitive market for DER products and services will be important as the opportunities for DER grow. The IPA has included a detailed set of contract and disclosure requirements for community solar programs, which may point to workable and effective consumer protections in other retail energy markets.[[8]](#footnote-8)
1. Pricing Options to Benefit Customers and Communities
	1. Intro/Overview: All electricity is competitively sourced in Illinois, either by individual customers, or through ARES, municipalities, hourly wholesale market pricing or the competitive auctions conducted by the IPA for utility default supply. Under current law and regulatory policy, large commercial and industrial customers must purchase electricity from retail providers or they can access hourly wholesale market procurement through the utility. Small commercial and residential customers have the additional option of tariffed utility supply service purchased through competitive bidding conducted by the Illinois Power Agency (IPA). Some stakeholders advocate that utilities provide a broader array of consumer options, while some oppose any offerings beyond those required by statute.
	2. Time-Variant Pricing:
	3. Flat rate prices mask true system costs of making, moving and using electricity, which vary by time and location according to electricity demand. Time-variant pricing reflects the fact that electricity is more expensive at high-demand times. When customers pay for the true cost of electricity at the time they use it, they better understand the financial and environmental impact of their usage and can choose to modify their consumption accordingly. In addition to potentially lowering many customers’ electric bills, time-variant rates can reduce pollution and carbon emissions, improve grid resiliency, and optimize renewable energy usage. Most stakeholders agree that at this time default residential utility supply rates should remain flat and other rate plans should be optional. However, some stakeholders want to see future consideration of opt-out time-variant rates for default utility service.
	4. Varieties of time-variant rates
	5. Hourly Pricing: Illinois is unique in offering all customers the option of market-based hourly pricing through utility procurement from wholesale energy markets operated by MISO (for Ameren customers) and PJM (for ComEd). By law, the residential hourly pricing programs are administered by a non-utility third party, and both utilities have selected Elevate Energy, an independent Illinois non-profit organization, as the program manager. The Ameren Power Smart Pricing program uses day-ahead hourly prices, whereas the ComEd Hourly Pricing program uses hourly real-time prices, but in other respects the programs are very similar. Hourly pricing is for supply only, as participants pay standard tariffed rates for delivery service.
	6. A website and mobile app provides hourly pricing participants with detailed information about their energy usage and costs, including comparisons to standard utility supply rates for each month and cumulative savings. Ongoing communication with participants includes high price alerts, energy-saving tips, annual individual performance reports, and a personalized savings portal showing historical and current data.
	7. Since inception of residential hourly pricing programs in 2007, ComEd participants have seen average energy cost savings of 22% compared to what they would have paid for the same usage on flat rates, and Ameren participants have seen 16% savings (not including any amounts saved by reduced usage in response to price signals). An analysis conducted by CUB and the Environmental Defense Fund (EDF) found that 97% of residential customers would have saved money in 2016 on hourly pricing, even without modifying their usage in response to fluctuating prices.[[9]](#footnote-9) Elevate Energy has calculated the average annual projected customer savings to be $86. This result should not be astonishing, since hourly pricing eliminates both the risk premium included in longer-term locked-in flat rates and the costs and profit margin for intermediaries.
	8. Hourly pricing is a voluntary program that has so far attracted participation of less than one percent of customers. This relatively low participation rate, despite the cost savings that would result for the vast majority of customers, appears to be the result of several factors:
		1. Hourly pricing is not well-understood by customers and it takes time and attention to appreciate its potential value.
		2. The effects of hourly pricing on overall electricity costs depend on the customer’s load shape. To project the effect on monthly on bills requires analysis that customers cannot do by themselves.
		3. Hourly pricing customers are exposed to the risk of price spikes. High wholesale prices tend to occur in peak summer periods and for brief periods of time, but occasionally can be prolonged, such as during the “polar vortex” winter of 2014, and sometimes occur at unexpected times.
		4. Marketing of hourly pricing has been limited to areas with AMI, which will not be fully deployed in the ComEd service territory until the end of 2018 and in the Ameren territory until the end of 2019. Utilities themselves are prohibited by the “Integrated Distribution Company (IDC)” rules from promoting a supply service, because that is deemed interference with the competitive retail supply market.[[10]](#footnote-10)
	9. Policy Options/Stakeholder Recommendations
	10. Stakeholders have proposed program design and customer education efforts to address hourly pricing issues:
		1. Shadow billing: The utility could show the effect of hourly pricing on monthly bills of a customer by comparing their current bill and retrospective annual costs with what they would be under hourly pricing or other optional rate plans.
		2. Reduction in Monthly Bill Variations: Some customers are deterred by the monthly bill variability associated with hourly pricing. Utilities should examine additional ways to leverage customer AMI data to offer enhanced budget billing programs for hourly customers.
		3. Savings Guarantee Pilot: Customer response to and performance under an hourly pricing program with guaranteed savings (over flat rates) should be studied.
		4. Hourly Rates Stability Collar: Occasional spikes in hourly rates could be ameliorated through an “insurance” program intended to prevent rates from fluctuating beyond an upper and lower threshold.
	11. Time of Use rates:
	12. Rather than prices that fluctuate hourly, known time of use (TOU) prices may be preferable for many customers who want to save money by shifting usage to off-peak periods more predictably. Variables to consider in designing TOU rate plans include:
		1. pricing period options (such as peak, off-peak, shoulder-peak, super-peak, weekend);
		2. rate structure (such as prices fixed vs. set at a fixed ratios between periods)
		3. magnitude of price variance between periods; (larger variance will induce greater load shifting, but may not reflect wholesale market variance)
		4. included elements of service (such as energy-only or bundled with TOU delivery services);
		5. seasonal adjustment
		6. method and frequency of energy procurement to serve TOU customers
	13. Policy Options/Stakeholder Recommendations regarding TOU rates:
		1. Utilities should be required to offer optional TOU rates, designed through an ICC proceeding that would consider the variables referenced above.
		2. Utilities TOU rate should be bundled to include both supply and delivery service.
		3. Expand the hourly pricing program to include a fixed-period TOU option, with variable rates but fixed price ratios between periods.
		4. Pilot programs that combine time-variant rates with different behind-the-meter devices. For example, the effect on energy usage of devices such as a simple price display, a disaggregated usage display, and a price-responsive thermostat, could each be tested against a control group under time-variant rates without an in-home device.
	14. Cross-cutting Issues: Ratemaking is the subject of Working Group 7, which further considers issues associated with time-variant rates [*THE IDEA OF CROSS CUTTING ISSUES NEEDS CLARIFICATION – ARE THESE CROSS-CUTTING BETWEEN WORKING GROUPS? THAT WOULD BE IRRELEVANT TO A READER OF THE FINAL REPORT]*
2. Topic: Market transformation
	1. Market Transformation (MT) efforts employ targeted strategies to speed the adoption of new technologies by customers, to reduce the cost of acquisition, and to overcome initial market barriers. The goal of MT is ultimately to change consumer transactional behavior so that a market becomes self-sustaining. Example of MT strategies in the electricity sector include programs and incentives in some states (not including Illinois at this time) to promote electric vehicle early adoption. In Illinois, peak-time rebate programs that educate customers about the money-saving benefits of reducing peak usage energy are an initial part of an energy market transformation effort, as are efficiency programs introducing consumers to new products and methods of saving energy. The ComEd Marketplace, an online store in which customers can purchase discounted energy efficiency and AMI-enabled devices, was approved for cost recovery by the ICC in a contested proceeding, in part as a component of the company’s consumer education and market transformation efforts.
	2. Policy Options. Stakeholders recommend different approaches to MT efforts:
		1. Examine which customer segments are accessing the ComEd marketplace and how it could expand its educational function and be oriented towards underserved communities that may lag behind in adoption of smart and energy efficient products.
		2. Support market transformation in energy efficiency through an EE scoring system. Because consumer products have multi-year useful lifetimes – as high as 10 to 20 years for most of the major end-uses, like domestic appliances, HVAC equipment and LEDs – purchasing inefficient products is costly to customers in the long run, even if they may cost less at the outset (and often they do not). Data and analytics are available to make efficiency visible and actionable by consumers. In the view of some stakeholders, market transparency reduces the need for mass market efficiency incentives and could be accomplished through a utility information site using a zero to 100 energy efficiency score applied to every marketed electric device (from appliances to vehicles).
	3. areas of agreement/disagreement;
	4. Issues for study
3. Topic: Participation by Customers and Communities in Distributed Energy Resource (DER) Opportunities
	1. Intro/Overview

As described and discussed by WG1, DER has potential to deliver individual, social, environmental, and grid system benefits. These opportunities can be optimized only through cooperation among customers, utilities, and third-party providers, facilitated by supportive law and regulatory policy.

Customer and community opportunities and challenges re: DER

* 1. Solar PV
	2. Opportunities: Photovoltaic (PV) installations and production of solar energy in Illinois are poised to soar under the FEJA legislation, which contains three new approaches to transforming the Illinois solar market:
		1. Community solar programs to allow residential and commercial customers to participate in solar energy even if they cannot install solar panels at their home or business; scale economies of these larger projects can make them more economic than home rooftop arrays.
		2. Adjustable Block Program to provide upfront payments to solar owners for long-term REC contracts, adding certainty to the amount of benefit and reducing initial capital investment; and
		3. “Solar for All” to bring distributed generation to low-income communities (with funding of approximately $150M from existing Renewable Energy Resource Funds) and to ensure that at least 50% of the solar energy produced is credited to participants as monthly bill reductions.

These programs are detailed in the IPA Long-Term Renewable Resources Procurement Plan as approved by the ICC.[[11]](#footnote-11) When fully implemented, solar power capacity in Illinois is projected to grow as much as 50-fold, perhaps to 3,000 MW by 2030. If solar continues to decline in cost, market forces could push the total even higher, particularly if small scale distributed storage becomes a cost-effective opportunity.

* 1. Issues/Challenges: Many customers are interested in solar energy but do not understand its ramifications for their energy experience or electricity costs. Because shopping for, acquiring and installing rooftop solar is an unfamiliar experience, customers need both trustworthy sources of information and reasonable consumer protections.
	2. In preparation for the impending growth of solar in Illinois, ComEd and Ameren are developing new tools for customers to become sufficiently informed and aware to make confident solar choices. ComEd’s “Digital Solar Toolkit” will include a calculator for customers to project the financial implications of home solar arrays, educational information about what to expect from the solar developer and the utility during installation and operation, and an online energy dashboard to provide individualized information about output, credits and other variables. Solar developers will be provided tools for interaction with the utility and management of interconnection requests for their customers. Similarly, Ameren is adding detailed solar information to its website and will be developing customer tools intended to create seamless solar connectivity.
	3. Recommendations/Options:
		1. Some stakeholders advocate changes in state solar policies to enhance participation of public buildings and not-profit institutions: Examples of practical ways to achieve this include (but are not limited to) technical assistance programs to navigate project planning and budgeting, publicizing annual budgets for SREC categories (this category and others), and publicizing timelines for funding announcements and project submission deadlines as applicable.
		2. Many large governmental agencies have significant rooftop space, open areas, and electric loads that would make them good candidates for solar installations. However, they may lack the significant administrative capacity, budget and capital planning flexibility required to navigate the development of a successful project. Timely availability of published SREC incentive levels and mechanism to reduce uncertainty of SREC incentives for non-profit and public facilities could enable more solar arrays to be installed on public and institutional buildings
	4. Small-scale solar installations are eligible for net metering, under which the full retail rate is credited to the customer for each solar kwh produced. Under FEJA, when net-metered enrollment reaches 5% of peak demand, net-metering will be phased out. Solar producers will receive a rebate for smart inverters, market-based payment for solar energy, and will be credited for the value of solar to the distribution system as determined by the ICC. The methodology for calculating the value of solar is a subject of Working Group 7 and has been discussed by Working Groups 1 and 6.
	5. Consumer protections: Consumer protections applicable to solar programs contained in the ICC-approved IPA Long Term Renewable Resource Plan may be a model for rules applicable to other DER marketed to residential customers. They include the following:
		1. Approval of vendors (and vendor requirements such as annual reports)
		2. Information about the relationship between the end customer, the installer/developer and the approved vendor
		3. Contract requirements and standard disclosure forms
		4. Marketing standards (based on existing Part 412 ARES rules)
		5. Right to cancel
		6. Prohibition on any loans being secured by a participant’s home
		7. Prohibition on prepayment penalties
		8. Consumer complaint hotline, monitoring and reporting

While some vendors find these sorts of requirements to be onerous, many stakeholders believe that experience has demonstrated the necessity of strong consumer protections in retail markets for energy products and services.

Energy Efficiency

* 1. Energy efficiency – driven by improved technology, appliance standards, market demand, regulatory mandates and utility programs – has kept overall usage flat or declining in recent years, even as the uses of electricity have continued to expand. Illinois has long had customer-funded EE programs run by the state of Illinois and the utilities under guidance from the Stakeholder Advisory Group. Under FEJA, EE spending increases to $XXXX and program design is consolidated with utilities, who are allowed to earn a rate or return on EE investments. Large industrial customers are now exempted from paying for or participating in EE, under the idea that they will make their own cost-effective EE investments.
	2. Recommendations/Options:
	3. Stakeholder proposals for modifying EE efforts to support customer and community participation include:
		1. Peer to Peer Energy Exchange: Allow individual customers to share their kilowatt hour savings from energy efficiency programs, credits from peak time rebate programs or generated capacity from investments in DER. For example, an individual saving 10 kWh from an energy efficiency investment could choose to pass those savings along to another individual in their community or donate to a pool to benefit LMI customers. Members of a community solar program could choose to donate their generation credits to the host site, such as a church, or share those credits with others. Such opportunities would build interest and energy awareness.
		2. EE/DER Community Donation: Energy Efficiency policies and pilot programs allowing, for example, participants to redirect their own energy savings to specified community organizations, or allow rooftop and community solar customers to “donate” energy produced to specified community organizations.
		3. EE Trading: policies and pilot programs allowing customers to capture additional financial value from their assets by selling the carbon attributes, RECs, or kWh to interested third parties such as corporations, local governments, individuals, and/or non-profits.  An initial pilot program could begin with assets tradeable between peers, such as the carbon credits associated with Energy Efficiency measures.
		4. EE Opt-in for large customers: FEJA exempted very large customers, those with greater than 10 megawatts of demand, from the utilities’ electric energy efficiency portfolio standard. [220 ILCS 5/8-103B(l)]. However, some large hospitals, and perhaps other public institutions, were covered by the blanket exemption but may want to participate in EE programs. One remedy would be to allow large users to opt-in to the utility efficiency programs. Changing this policy would require revising 220 ILCS 5/8-103(B) and providing ample notice for modification of EE program portfolios.
		5. Primary Research of Non-Energy Benefits: FEJA makes energy efficiency programs and base customer operations more integrated concerns to a utility, however utilities are generally still structured to deliver them separately. Further, utilities may be discouraged from changing this structure because of how rates are currently designed. However, these customer experiences should be more fully combined because:
		6. Customers may not know the difference between an efficiency program offering and their basic utility service. The business model of the provider should match the customer experience expectation, and the value proposition to the utility customer, the utility, and any third-party service providers should be aligned. (e.g., if a customer is induced to get an efficiency benefit because of a new program, the utility increases their revenue and reduces their pass-through expense, which benefits ratepayers. The new program provider needs to be compensated for providing the benefit, but only to the degree that it reduces ratepayer costs and doesn’t increase the burden on the customer or utility).
		7. Providing a uniform benefit structure to a third-party service provider enables more efficient program delivery, as the provider may be able to offer expanded features if they can increase revenue without duplicating efforts or providing a separate experience. The value of this approach is being examined by the Illinois Stakeholder Advisory Group. See: <http://ilsagfiles.org/SAG_files/Evaluation_Documents/Draft%20Reports%20for%20Comment/ComEd_EPY9_Draft_Reports/ComEd_Income_Eligible_Programs_NEBs_Secondary_Research_Report_Draft_2018-03-06.pdf>

Electric Energy Storage (thermal, battery)

* 1. Introduction/Overview: Cost-effective electricity storage has long been seen as the “holy grail” of energy optimization because it would mean cheap off-peak power could be saved for future use and would allow clean power sources with zero fuel costs but variable output -- like wind and solar – to generate energy whenever the wind is blowing or the sun is shining, but for customers to use it whenever needed.
	2. Batteries are well suited for ancillary services to balance the grid and defer or avoid infrastructure investment to address congestion, and grid-scale battery storage is already competing with natural gas plants to serve peak loads under certain conditions.[[12]](#footnote-12) Energy storage can also serve as a backup power source to prevent or recover from outages. Well-integrated energy storage can make the grid more stable, flexible and efficient.
	3. Storage is a unique DER, because it alternates between being an energy source and a system load, sometimes very quickly. [*This …(has what effects and challenges?)*] Because it can support the delivery system in various ways, storage combines characteristics of supply, demand, and system operating technologies.
	4. Storage not only has significant environmental advantages over fossil-fueled generators, but it can be deployed at any scale and sited wherever needed. Eventually that may be in a consumer’s basement or closet (and car) if present declining cost trends continue. Forecasters agree that the cost of storage will continue to decline as production volume increases and technology improves. Bloomberg New Energy Finance projects battery prices at less than one-third of today’s cost within a decade.[[13]](#footnote-13)
	5. Issues/Challenges

Stakeholders have differing views as to the optimal role for utilities in owning and operating storage facilities, a key subject for public policy discussion as energy storage opportunities grow. Other issues include the effect of customer-owned energy storage on the grid and on other customers, including the effect on rates and cost allocation

* 1. Challenges: Cost-effective behind-the-meter energy storage has many benefits but will raise thorny new issues for tomorrow’s grid. A customer with self-generation and storage capacity will use far less grid-provided electricity. In theory, with enough on-site storage and generating capacity, a customer could disconnect from the grid entirely. This occurs rarely today, because such electricity isolation is not only expensive but risky. However, if the savings over grid-provided electricity were sufficient, “grid defection” could be an economic choice. Remaining customers would be left to cover the grid’s fixed costs. Rising rates would make it economic for other customers to leave the grid, thus raising rates further in a continuing cycle that could (theoretically) set in motion a utility “death spiral.”
	2. There are many reasons why such an outcome is unlikely, including the significant value of a customer to be connected to the grid – not just for reliability of service and backup power, but for the ability to transact over the network. A healthy, reliable, accessible and affordable grid will remain essential, and many customers will remain grid-connected, either by choice or necessity. However, the potential for grid defection highlights the need for careful future ratemaking (as examined in WG7) and raises questions about whether regulation should address the potential for customers to go “off-grid,” and how utilities may respond to customer bypass of their delivery systems. A crucial public goal in the NextGrid era will be to create an environment in which all customers, whether or not they are grid-connected, will thrive in tomorrow’s energy system.
	3. Demand Response
	4. As discussed in WG1, Demand Response (DR) refers to changes in usage in response to variables such as pricing, load conditions, and other variables. Modification of consumption can be:
		+ 1. centralized through direct load control (DLC) by a third party such as the utility; or
			2. automatic through a behind-the-meter device such as a smart thermostat or a software applet responding to signals or prices; or
			3. behavioral, through customer management in response to an alert or other message.
	5. Because DR can benefit the individual customer (through cost savings), the environment (through reduced emissions) and the electric system (through greater efficiency and lower peaks), several utility DR programs are in place to allow customers to monetize usage reductions during peak events. These include DLC programs under which the utility turns air-conditioning down or off during peak events and the customer receives a flat seasonal fee, and Peak Time Rebates under which customers who voluntarily reduce usage during peak events are paid a per/kWh fee. DR can obviate the need to fire up gas peaker plants, and some DR measures can be dispatched quickly enough to be used for ancillary services, so demand reduction can now compete with energy supply in various wholesale markets. This opportunity is motivating competitive energy providers to offer DR programs, including aggregation of participating customer loads
	6. Much like energy storage, DR is a valuable complement to the variable output of wind and solar generation and gives system operators a flexible tool to smooth imbalances between supply and demand. When combined with other DER through system management software, aggregated DR can be a reliable component of a “virtual power plant,” that can be dispatched like a large central station generator, only much quicker and without the physical plant or fuel consumption, providing economic returns to participants and system benefits.
	7. Stakeholder Recommendations/Policy Options

Several proposals have been made by stakeholders to enhance and actualize the customer and community value of DR:

* + 1. Change the utility business and operational model to accommodate peer-to-peer transactions: Customers could maximize the value of their DER, energy storage, and flexible demand through trading across the distribution network. (The idea of changing the utility business model into one that facilitates transactions is discussed by WG1, WG5 and WG7).
		2. Study blockchain technology: Blockchain is a system for maintaining distributed ledgers of facts and a history of updates and transactions. It provides near real-time and immutable records of transactions among all participants and reduces or eliminates the need for trading intermediaries, which makes feasible very large volumes of very small transactions. With blockchain, utilities or distribution system operators can identify participating distributed energy resources on the network, determine what those resources can contribute to future energy management events, and assess the value of the contribution quickly after the event.
		3. Educate customers and pilot blockchain: ICC should hold workshops on blockchain technology and its application. The goal of these workshops will be to explore and define the best use cases for this technology and to develop pilots to test efficient, scalable, and accurate integration of distributed energy resources.
		4. Peer to Carbon Trading Market: The ICC and utilities should explore how individuals interested in reducing carbon could trade credits or attributes associated with non-carbon generating resources. A pilot to test promising approaches could follow.
		5. Expand utility DR programs: DLC air-conditioning programs could be augmented by piloting other appliances such as water heaters; “prices-to-devices” technology for automatic response by appliances could also be piloted.
	1. DER Participation
	2. A key barrier for many customers to participate in DER is not just lack of information about energy investments that can save money in the long run, but lack of access to capital for these investments. Another challenge is that the payback period for DER may be longer than the anticipated residency in the home. An additional barrier for renters is the fact that they do not own the premises and may not be remaining in the dwelling long enough to reap the benefits, and landlords may have little incentive to install DER. Options to address these problems include:
		1. On-bill Finance Expansion: Utility long-term on-bill financing (OBF) programs have proven to be an effective tool to help customers manage up-front costs of energy efficiency upgrades. But they have been limited to *[ADD OBF DATA].* OBF could be significantly expanded in scale and scope, with financing terms tied to the lifetimes of different DER, allowing for immediate bill savings.
		2. In addition to including DER, OBF could be expanded and applied to other services such as water conservation. Allowing OBF to assist with water conservation measures would bring awareness of the energy finance opportunity to some customers that may not otherwise engage with energy utilities. OBF expansion would require changes to 220 ILCS 5-16/111.7 (electric) and 220 ILCS 5-19/140 (gas).
		3. Long-term financing methods such as PACE, where the costs of investment in energy upgrades stay with the building when ownership changes can help address the limited residency challenge.[[14]](#footnote-14) (Would require legislative authorization)
		4. Competitive providers are beginning to capitalize on the DER financing challenge. For example, some solar business models are based on financing installations and paying for them with revenue from the energy and solar RECs produced plus any tax credits or other public support.
		5. Community energy planning: Current energy efficiency programs and renewable energy programs operate in silos – incentivizing specific technology or programs limited in scope, with no overlap in marketing, incentives, or economic impact. Some stakeholders recommend integrated new options, including:
		6. Development of a new Community Energy Plan model that would attempt to integrate EE, DER, and other energy programs. The intent would be to enable communities to organize energy initiatives on a local scale, layering energy efficiency, distributed generation, resiliency, workforce development programs and incentives to benefit residents and businesses.  Community Energy Plans would help communities lay out the programs and paths that best meet their local needs, enabling greater participation by residents and small businesses often left out of energy initiatives. Community Energy Plans would also allow communities to create a closer tie between transportation electrification, transit, and transportation alternatives, targeting shared infrastructure to community needs. Statutory and regulatory changes could create a Community Energy Plan initiative that works within the new Energy Efficiency, Adjustable Block Program, Solar for All Program, and Community Solar programs, to allow communities to approve a plan to design and direct DER investments in geographically targeted areas. That could produce complementary benefits, such as a community solar project combined with housing retrofit and workforce development initiatives. Community planning could also promote the idea of community solar as part of new housing developments and open the door for local electrification incentives and initiatives.
		7. Expand utility planning: Some stakeholders want to see utility system planning expanded to include coordination with non-utility DER, through Integrated Distribution Planning (IDC). IDC would broaden system planning to include more stakeholders in an attempt to target DER growth for where it can provide the most value for customers and reduce system costs. However, reliance on unregulated and uncommitted assets for distribution system planning would raise new challenges for system operators. (IDC is further discussed in WG1 report*).*
		8. System Mapping: Utilities could create maps showing where solar and other DER at different scales would most benefit the system, based on its projected dynamics and congestion. This could help target optimal locations for community solar and could be combined with location incentives.

*[AS IN OTHER SUBJECTS ABOVE AND BELOW, SOME OF THE LISTED OUTLINE SUBTOPICS ARE ALREADY ADDRESSED IN THE TEXT ABOVE AND MAY NOT NEED FURTHER EXPLICATION. THE COULD BE REARRANGED TO FIT THE STRUCTURE IF NEEDED]*

* 1. Areas of agreement/disagreement
	2. Issues for Study
	3. Findings/Conclusions
1. Topic: Transportation Electrification (TE) -- Customers and Community Impact
	1. Intro/Overview

Stakeholders agree that TE has tremendous potential benefits for customers and communities. In addition to the high performance, low operating costs, and other characteristics that are gaining electric vehicles (EV) a foothold in the car market, they reduce pollution and carbon emissions and their charging can be managed to flatten the system load shape, use utility assets more efficiently, support reliability, and make better use of renewable energy. As a matter of arithmetic, if revenues from EV charging loads exceed the incremental costs to serve them, the added contribution to utility fixed costs can make everybody’s electric rates lower than they otherwise would be.

Charging of personal EVs is anticipated to occur primarily at home, where a combination of time-of-use rates (TOU) and managed charging programs have the potential to move EV charging to overnight and off-peak periods when the new demand can be accommodated without new infrastructure. Stakeholder generally agree that this is desirable. However, the nature and extent of TE public policy is a subject of diverse stakeholder views on key issues.

* 1. Public charging infrastructure: Much of the discussion around policy to promote electric vehicle growth has centered on issues related to public charging infrastructure: How will it get built? To what degree (if any) should it be subsidized? What role should utilities have? What kind of rates should apply? Stakeholders express these viewpoints on public charging issues:
		1. In the view of some stakeholders, large numbers of public charging facilities, particularly direct current fast charging (DCFC) are needed to sustain EV market growth, but will not appear without utility participation because they are too costly to be paid for by user fees alone. Proponents of utility charge station investment assert it will provide public benefits exceeding costs and they support pilot programs to test different business models.
		2. Some stakeholders assert that significant involvement by utilities must inevitably be an element of EV public policy. However, they believe public charging infrastructure is but one way in which utilities might be involved in promoting beneficial EV growth. Others include providing information, rate options, smart charging programs, assistance for EV car sharing in LMI communities, and support for charging opportunities in multi-unit dwellings and on streets. Proposals for public funding of charge stations should be compared with alternative investments and examined as part of a broader EV policy investigation.
		3. Consumer protections are needed when public or customer funds are expended. Many stakeholders advocate that any utility subsidies for independent charge stations be contingent on acceptance by operators of model rate structures, price constraints, interoperability and service quality requirements.
		4. Some stakeholders advocate an approach centered on ensuring that consumers who do not have EVs will also benefit from TE policies and programs. In this view, the key objective is to manage charging loads to make the electricity system more efficient, thereby providing net benefits for all electricity customers.
		5. If utilities invest in charging infrastructure, consideration should be given to incentive mechanisms to align customer, societal and utility interests. These could include performance and utilization metrics, cost constraints, customer satisfaction, and other benchmarks.
		6. Some stakeholders assert that before the Commission could consider policy to expend utility funds to support EVs on environmental grounds, a legislative directive is required, as existing law does not provide a clear policy basis. In this view EV growth policies based on its system optimization benefits are within current state regulatory jurisdiction.
		7. Some stakeholders assert that public money for EV support should be appropriated by the general assembly from general or special tax sources or bond issues instead of utility customer funding authorized by regulators.
	2. Charging infrastructure is one of many EV policy issues. Stakeholder proposals to address other aspects of TE include:
		+ 1. Target marketing of hourly pricing and other TOU rate structures to EV owners, including educating auto dealers and providing onsite information and enrollment materials.
			2. Pilot TOU rates that would apply only to the EV charging portion of household usage; the extra cost of a second meter might be avoided by using the charger itself to measure usage, adding a module, or through disaggregation software.
			3. Pilot smart charging programs under which a utility would modulate charging among participating vehicles to optimize loads based on real time variables to prevent ramping or neighborhood peak issues, coordinate with renewable energy output, optimize local load shape, and use aggregated EV loads as DR resources.
			4. Study workplace charging: If solar power penetration ever reaches a point (as in California today), where there is plentiful solar generation in peak afternoon periods, support for workplace charging would be a way to sync charging with renewable energy output and increase system and public benefits.
			5. Consider multi-unit building issues: Large buildings with parking lots pose particular challenges for EV charging because the combined loads of many cars charging simultaneously could overwhelm a building’s electricity system. Dynamic management of charging flows to each plugged-in vehicle could prevent overloads while allowing all vehicles to charge (though at a slower pace). While these issues must be managed by building owners, property managers and homeowners associations, all customers have an interest in avoiding costly distribution system upgrades, raising questions of whether utility support and regulatory involvement in EVSE at large buildings may be beneficial. In California, minimum EVSE requirements have been added to new construction building codes. Whether a tenant or owner in a multi-unit building has a right to plug in an electric vehicle or install EVSE, or whether these decisions should be left to private discretion and market forces will be a public policy issue.
			6. Consider street lights as a public charging option: Many potential EV owners do not own a garage or have access to electricity where they park their car. In urban areas customers may have only street parking or no place to plug in. Existing street lights present a significant opportunity to expand charging access at a marginal cost. Street lights are adjacent to parked cars, have electric connection already, and are dispersed plentifully. New street light systems can incorporate simple pay-per-use Level 1 connections that can be inexpensively added to poles. With the shift to more efficient LED streetlights, there may be ample capacity to accommodate EV charging at low power. However, street lights are usually charged on a separate utility rate structure or provided free to a municipality and recovered through a franchise fee. The ICC should study these rate structures and franchise agreements to enable cities a cost-effective new option to support TE in their communities.
			7. EV Charging Coordination: Utilities should create publicly available maps or mapping tools that indicate where grid infrastructure is sufficient for DCFC. This would allow EV charging station hosts to estimate necessary infrastructure upgrade costs by location and plan for cost-effective siting. The tool could also serve as a platform for tracking planned installations so that multiple hosts could coordinate.
			8. Modify Class Definition to Support TE: Define a new class -- the equivalent of the “railroad” rate class for public transit electric rail fleets – for public transit electric bus fleets. The railroad rate class has historically received a discounted demand charge (“distribution facilities charge”), in part based on the fact that electric rail transit service provides public benefits. It is an affordable, low-emissions transportation mode that encourages compact development. Public transit electric bus fleets provide the same benefits. This concept could be broadened to other public fleets (i.e., non-transit public fleets such school buses or emergency response vehicles).
	3. Findings/Conclusion re: TE *[AS ELSEWHERE, MAY NOT NEED FURTHER DELINEATION OF SUBTPICS]*
		1. areas of agreement/disagreement;
		2. questions/issues raised;
		3. policy options
		4. issues for study
1. Topic: Addressing Needs/Concerns of Low and Moderate Income (LMI) Customers and Communities
	1. Intro/Overview: Many low and moderate income (LMI) households struggle to pay their utility bills. LMI (Low and Moderate Income) utility customers can be defined as those households with annual income below 200% of the federal poverty level of $24,300 (in 2014) or 80% of the annual median income (AMI), which in Illinois is $60,960 (calculating to LMI ceiling defined as $48,768).[[15]](#footnote-15) In the ComEd territory, 47% of the population lives on less than 80% of AMI; in the Ameren territory the number is 41%. [stats from AG and Delta PRESOs – need cite]
	2. As income inequality has grown in America so has the affordability challenge. A stronger economy in recent years has not eased the burden for many households, as a 2017 survey found a 7% increase in households reporting trouble paying their utility bills.[[16]](#footnote-16) Statistics abound: A study by the Federal Reserve found that 41% of Americans could not pay for a $400 unexpected emergency.[[17]](#footnote-17) The annual EIA study of household energy use found that 31% of households reported a challenge in paying energy bills or sustaining adequate heating and cooling.[[18]](#footnote-18)
	3. LMI Customers and DER: LMI customers face barriers to participation in emerging DER opportunities. These include low rates of home ownership, lack of access to capital for cost-effective energy investments, sub-standard housing that raises heating and cooling costs, old and inefficient appliances supplied by landlords, lack of internet service and access to energy information. However, LMI customers are not disengaged from energy usage issues. In fact more than 80% report that they are interested in finding ways to save on utility bills and more than half report having taken measures during the past year to do so, such as getting efficient appliances, bulbs, or thermostats.[[19]](#footnote-19)
	4. Key challenges for addressing the needs of LMI customers ion the NextGrid era include how to:
		1. engage and inform LMI customers of real opportunities to cut their energy bills;
		2. protect them from abusive practices and marketing;
		3. design innovative billing and payment options to make energy more affordable;
		4. bring the benefits of DER and grid modernization to LMI communities
		5. provide trustworthy information that LMI customers need to make energy-smart choices
		6. ensure that utilities have incentives to maintain affordable service and help LMI customers avoid disconnection

[Other? Less? More?]

* 1. Innovative proposals to empower LMI customers through market-based initiatives should be combined with regulatory and utility efforts to address barriers, provide assistance, and motivate behavioral change to reduce energy burdens. Analysis of AMI data and plug loads can provide a means for LMI and other customers to understand their usage patterns and make good choices that result in lower bills.
	2. LMI customers may lack high speed internet service but are increasingly connected through smartphones.[[20]](#footnote-20) More than nine out of ten people with annual income below 30K have a cellphone and about three out of four have smartphones. This is fairly consistent across racial lines, although smartphone ownership falls off sharply among older adults, a statistic that is anticipated to change over time.[[21]](#footnote-21) The amount of time spent on mobile devices has reached a daily average of 3.1 hours and continues to grow.[[22]](#footnote-22) Daily non-voice time spent on smartphones is anticipated to reach 2 hours 42 minutes by 2019.[[23]](#footnote-23) Clearly digital engagement through apps, messaging, and social media must be at the center of NextGrid customer engagement strategies.
	3. Customer Assistance
	4. Illinois does not presently have “lifeline” utility rates, but there are a variety of programs directed at reducing energy burdens for LMI households. State programs include the Percent of Income Payment Plan (PIPP) and Low-Income Home Energy Assistance Program (LIHEAP). Funding for these programs is inadequate to the task as demonstrated by the fact that in 2017 there were 118,235 Illinois households enrolled in LIHEAP out of 1,092,303 households with income less than 150% of the federal poverty level.[[24]](#footnote-24) PIPP {*DESCRIBE*} is limited to $XXXXX in annual funding and has YYYY participants.
	5. ComEd and Ameren have customer assistance programs of their own to address special hardship cases, active military and veterans, and low-income customers with critical medical care needs. ComEd assisted 16,000 customers in 2017 with these “ComEd CARE” programs.
	6. Recommendations/Responses/Policy Options
	7. Stakeholders agree that existing resources are inadequate to the task of making utility bills affordable to all LMI customers. In addition to stakeholder recommendations discussed earlier in this report intended to benefit all customers, proposals for action to address affordability and other LMI issues include:
		1. Consider changes in policy and practice to provide new options for billing, payment, service deposits and deferred payment arrangements intended to maintain and resume service for customers who cannot afford to pay their entire bills.
		2. Increase the resources available for programs such as PIPP, LIHEAP and other programs.
		3. Bundle and coordinate utility programs: To streamline program delivery across utility divisions and present a package of options individualized for each customer, utilities should explore ways to combine energy efficiency, demand response, rate options, payment assistance and other services for LMI customers. Ideally this could be done by ComEd in partnership with Peoples Gas an Nicor. Offering a “bundle” of options should lead to efficiencies in program delivery and higher enrollment. For example, customers who receive LIHEAP assistance or participate in the PIPP program could be given an energy consultation that reviews options and identifies programs that may support that customer, including billing and payment assistance, pricing options, community solar and other opportunities. Enrollment could be done for multiple programs at one time.
		4. Customers who apply but are not able to participate in assistance programs could be prioritized for outreach and participation in utility programs. Anonymous usage data could be combined with census data to identify high priority areas within a utility service territory for consultation events where combined program enrollment could take place.
		5. Provide more ways to access information: Initiate policies and pilot programs that better equip low-income customers with access to hourly pricing information by not requiring WiFi access, and doing so in a format that is more easily understood and actionable.  For example, leveraging existing utility paging networks to send regular hourly pricing signals to display devices provided as needed to those low-income customers on hourly pricing.
		6. Improve incentives and metrics: Include incentives to reduce energy burdens in any utility PBR initiatives, such as reductions in terminations, bad debt, usage reduction and other metrics. Measure the success of any regulatory program by its effect on vulnerable communities. A bilingual bicultural approach that speaks both to the interests of individuals and the economic welfare and health of the community should accompany all programs and initiatives.
		7. Give customers the tools they need to manage costs – including those without the time or expertise to do it for themselves. Many customers are not going to engage with the utility about their energy options regardless of efforts in that direction because they are too busy or overwhelmed with survival issues. Benefits of new technologies – and particularly the more affordable bills they promise – should be delivered to LMI customers through such programs as community solar, targeted energy efficiency, and other innovative options. The central goal should be to reduce household and community energy burdens.
	8. Opportunities and Challenges [*AGAIN, THESE SUBTOPICS COULD REITERATE OR DELINEATE OR EXPAND THE ISSUE DESCRIBED ALREADY]*
	9. Findings/Conclusions re: LMI
		1. areas of agreement/disagreement;
		2. questions/issues raised;
		3. policy options
		4. Issues for study
1. Topic: Grid Modernization and Very Large Commercial and Industrial Customers
	1. Intro/overview
	2. A large energy-intensive manufacturing facility may use as much electricity as a small city. The 30 largest industrial customers in Illinois together use a total of 13 million MWH of electricity per year (and employ about 90,000 people).[[25]](#footnote-25) They employ energy managers to optimize their usage and often participate in demand response to levelize consumption patterns and minimize costs.
	3. Particular concerns/needs of VLC&I
	4. The largest customers have the same core concerns as small-volume customers -- reliable service at the lowest possible cost – but they do not need the same level of supportive utility services and are skeptical of new utility investments at a time of flat demand. They believe that new technology or market changes affecting the way electricity is produced, delivered, and used in Illinois should be valued based on net benefits to be realized by customers -- either through lower rates, increased reliability, enhanced customer convenience, expanded customer choice, or expansion of competitive markets.
	5. Very large customers have energy managers who engage in sophisticated strategic energy acquisition and planning. Their average delivery service rates per kWh are lower than small commercial and residential rates because they generally have flatter load shapes. Delivery service rates of large customers have steadily increased but have been offset by lower energy costs, and total Illinois C&I unit costs remain below national averages. Total average electric costs per kWh in Illinois are 13.21 cents for residential customers, 8.84 cents for commercial and 6.45 cents for industrials.[[26]](#footnote-26) Nationally these numbers are 13.15, 10.51 and 6.82 respectively.
	6. From the perspective of very large industrial customers, regulatory policies intended to optimize system load shape and maximize efficiency are superfluous for them because they voluntarily participate in all energy management efforts that are cost-effective for their usage patterns, volumes and industrial applications. That is why under FEJA the General Assembly exempted large C&I customers from paying toward utility energy efficiency programs. Large industrial customers generally object to paying for non-bypassable costs such as renewable energy, zero-emissions credits, and elements of delivery service they do not use.
	7. Questions/issues raised: Advocates for other customer classes generally disagree with this view. They believe that regulatory policies and utility services that benefit the community, the environment, and smaller volume commercial and residential customers ultimately also benefit large industrial customers, so it is fair and appropriate that they share in the costs. They point out that the FEJA exemption from EE programs saves them money and they benefit additionally when lower usage and growing renewable output puts downward pressure on market energy rates – particularly at night when many of the largest industrial customers are operating.
	8. policy options
	9. Opportunities and Challenges
	10. Findings/Conclusion re: Very Large Customers:
	11. Issues for study
2. WG4 Report Conclusion [*NEED TO DRAFT CONCLUSION]*
	1. Areas of agreement
	2. Key areas of disagreement
	3. Cross-cutting issues
	4. Key recommendations/action items
1. The remainder are served by two investor owned utilities, 32 municipal utilities and 24 electric cooperatives. [↑](#footnote-ref-1)
2. Data from ICC annual statistics: <https://www.icc.illinois.gov/reports/report.aspx?rt=7> . There are also rate classes for mass transit customers, street lighting and other special cases. [↑](#footnote-ref-2)
3. Cite the 2017 report, which is not yet posted on the ICC site at https://www.icc.illinois.gov/Electricity/utilityreporting/ElectricReliability.aspx [↑](#footnote-ref-3)
4. See: <http://www.greenbuttondata.org/> [↑](#footnote-ref-4)
5. see: <https://openid.net/> [↑](#footnote-ref-5)
6. See ICC Office of Retail Market Development annual reports: <https://www.icc.illinois.gov/reports/report.aspx?rt=22> [↑](#footnote-ref-6)
7. Data from ICC Office of Retail Market Development annual reports: file:///C:/Users/Marti/Dropbox/Minnesota%20EV%20Comments/2018%20ORMD%20Section%2020-110%20Report.pdf [↑](#footnote-ref-7)
8. See IPA Long-Term Renewable Resource Plan filed 12-2017, p.140 at https://www2.illinois.gov/sites/ipa/Pages/Renewable\_Resources.aspx [↑](#footnote-ref-8)
9. Zethmayr, J. and Kolata, D., *The Costs and Benefits of Real Time Pricing: An empirical Investigation into customer bills using hourly energy data and prices*, November 14, 2017, available at <https://citizensutilityboard.org/wp-content/uploads/2017/11/FinalRealTimePricingWhitepaper.pdf>. [↑](#footnote-ref-9)
10. The ICC granted a limited rules waiver for utilities to offer the hourly programs [↑](#footnote-ref-10)
11. See IPA Plan and ICC Order: <https://www2.illinois.gov/sites/ipa/Pages/Renewable_Resources.aspx> [↑](#footnote-ref-11)
12. See,e.g.: https://enerknol.com/wp-content/uploads/2018/07/EKR-PU-Visual-Primer-Battery-Storage-Peaker-Plants-7-17-2018.pdf [↑](#footnote-ref-12)
13. See Invenergy presentation to ICC Policy Session 6-27-18 [↑](#footnote-ref-13)
14. See <https://www.energy.gov/eere/slsc/property-assessed-clean-energy-programs> [↑](#footnote-ref-14)
15. The IPA uses 80% AMI to define LMI for the purposes of its programs [↑](#footnote-ref-15)
16. <http://defgllc.com/publication/the-long-struggle-continues-improving-service-to-low-income-customers-in-the-utility-sector/> [↑](#footnote-ref-16)
17. <https://www.federalreserve.gov/publications/files/2017-report-economic-well-being-us-households-201805.pdf> [↑](#footnote-ref-17)
18. <https://www.eia.gov/consumption/residential/reports/2015/energybills/?src=%E2%80%B9%20Consumption%20%20%20%20%20%20Residential%20Energy%20Consumption%20Survey%20(RECS)-f1> [↑](#footnote-ref-18)
19. <http://defgllc.com/publication/the-long-struggle-continues-improving-service-to-low-income-customers-in-the-utility-sector/> [↑](#footnote-ref-19)
20. <http://www.pewresearch.org/fact-tank/2017/08/31/smartphones-help-blacks-hispanics-bridge-some-but-not-all-digital-gaps-with-whites/> [↑](#footnote-ref-20)
21. <http://www.pewinternet.org/fact-sheet/mobile/> [↑](#footnote-ref-21)
22. Kleiner Perkins data [get citation from Kevin Dick] [↑](#footnote-ref-22)
23. <https://www.emarketer.com/Article/US-Adults-Now-Spend-12-Hours-7-Minutes-Day-Consuming-Media/1015775> [↑](#footnote-ref-23)
24. <http://www.homeenergyaffordabilitygap.com/03a_affordabilityData.html> [↑](#footnote-ref-24)
25. Estimate from Illinois Industrial Energy Consumers [↑](#footnote-ref-25)
26. See EIA data at <https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a> [↑](#footnote-ref-26)