

Presentation to Council

June 11, 2012

Introduction by
Councilman Dr. Vincent Esposito

Three Utility Topics to discuss:

- 1. Advanced Metering Infrastructure**
- 2. Voluntary Demand Response**
- 3. Residential Solar Rates**

Advanced Metering Infrastructure



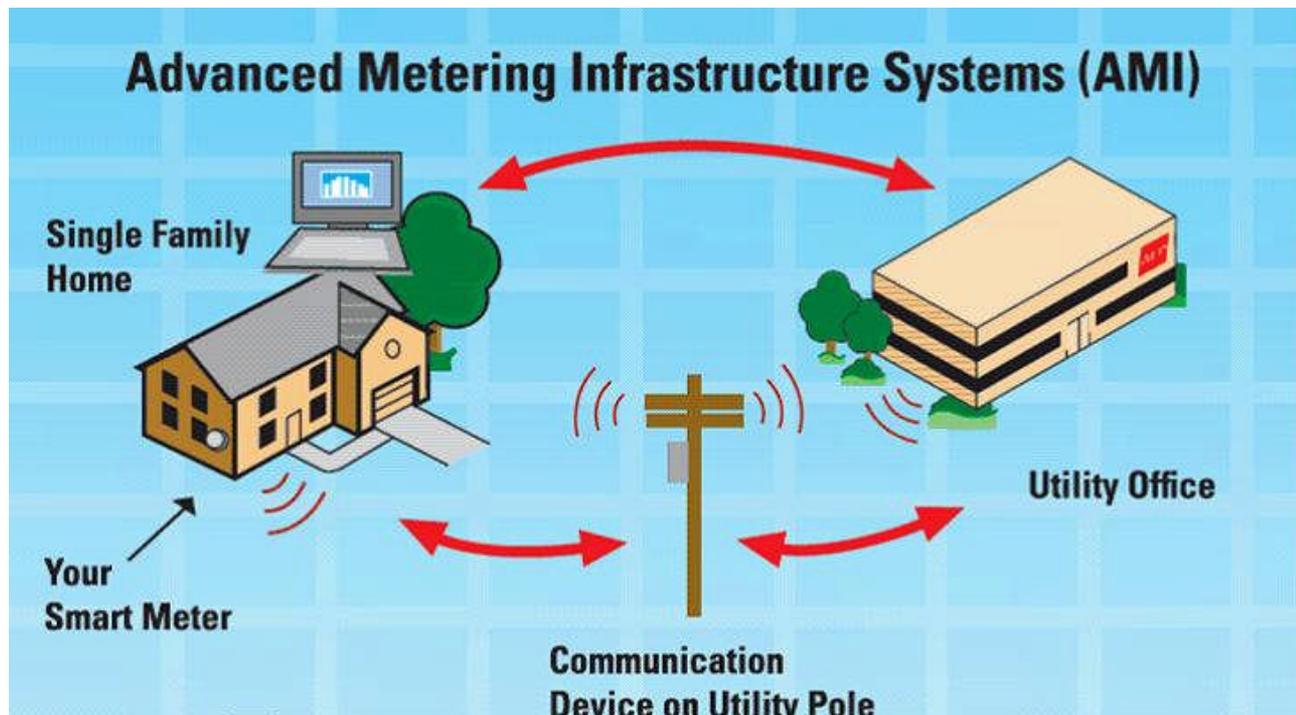
Jim Burnet
Jim Sanderson
Curt Wilson



Advanced Metering Infrastructure

What is Advanced Metering Infrastructure?

- Smart Meter
- Communication Platform
- Back Office Data Management System



Advanced Metering Infrastructure

Utility Size

2011 Utility Metered Annual Revenue approx \$ 24,000,000.
(\$2,281,000 water, \$22,351,000 elec.)

AMI Project Cost Estimate

\$2,000,000+

Project Benefits

Direct Financial Benefits

1. Equitable billing - Customers pay their fair share
2. Bulk Supply Procurement, Advanced Rates
3. Data Collection, Staff & In-Field Service

Ancillary Benefits

4. System management
5. Customer Service
6. Future Expansion



Advanced Metering Infrastructure

Cost/Benefit

Direct Financial Benefits

1. Equitable billing - Customers pay their fair share

Full system audit to occur during installation which will identify issues (bad metering instrument transformers, wrong meter multipliers, bad meter connections/leaks, incorrectly applied meters, tampering, customers on incorrect rate plans, and customers/meters not in billing system.)

Reduce lost revenues due to un-metered energy/water including unmetered service and slow meters.

Reduce energy/water theft. Modern meters can identify most tampering/theft.

Estimated increase in revenue = \$500,000 annually

10% inc in revenue from unmetered water, slow water meters, etc	\$228,000
1% inc in revenue from unmetered electric, slow electric meters, & other issues.	\$224,000
0.2% increase in revenue from other factors mentioned above.	\$48,000



Advanced Metering Infrastructure

Cost/Benefit

Direct Financial Benefits

2. Bulk Supply Procurement, Advanced Rates

Permit more advanced rate structures including voluntary Time of Use metering. This will limit supply price risk by reducing monthly demand charges, and limiting energy purchased during high cost hours.

AMI supports voluntary Load Management/Demand Response further limiting supply price risk by reducing monthly demand charges, and limiting energy purchased during high cost hours.

More complete utility system and customer data will improve utility system efficiency (utility system loss reduction via power factor correction, conservation voltage reduction, better load/phase balance for electric, and better utility system and customer loss/leak detection).

Estimated savings = \$102,000 annually

5% annual savings in Locational Marginal Pricing (spot mkt) Costs (\$660,000)	\$33,000
1.5% annual savings in Demand Charges ("Peak" Charges = \$3,000,000)	\$45,000
0.1% annual savings in system efficiency measures	\$24,000



Advanced Metering Infrastructure

Cost/Benefit

Direct Financial Benefits

3. Data Collection, Staff and In Field Service

Improve meter reading speed with no vehicles needed and less gas used.

Improve customer billing/meter reading accuracy. Tracks metering infrastructure identifying problems, assisting with maintenance/replacement management.

Reduce number of part time meter readers. Full time meter position converted to data/system management and metering maintenance/replacement

Reduce outage restoration times (and thus sell more electricity), reduce lineman overtime, assure complete area outage restoration before crews leave area.

Estimated savings = \$70,000 annually

Part time staff savings, reduced vehicle and gas usage	\$58,000
.05% annual increase in revenue from reduced outage times	\$12,000



Advanced Metering Infrastructure

Ancillary Benefits

System

- More complete data will allow Borough to better manage utility supply planning, utility system planning, existing and new utility infrastructure use and maintenance, and allow for planned incremental capital improvements
- Provide better system-wide energy and water loss data (energy/water lost to the Madison grid) to identify cost effective capital improvements

Service

- Customer water leak and electrical loss detection
- Allow timely customer energy/water consumption feedback, via billing system, in-home displays, and/or customer web portals
- Allow for on-demand meter reads for better customer service (customer turnover and billing complaints)
- Outage assessment and restoration tools to reduce outage restoration times, and assure complete area outage restoration before crews leave area
- Improve meter reading speed and accuracy (less incorrect reads)

Future

- Future potential for automated distribution functions to reduce system losses and improve reliability
- Future potential for Load Management/Demand Response programs and technology to better manage load and reduce peak consumption charges
- Expandable system will allow Madison to take advantage of future technological advances offering more competitive utility as compared to PSEG & JCPL



Advanced Metering Infrastructure

AMI Project Cost

Estimated at \$2 million

Cost/Benefit

Direct Financial Benefits

Equitable billing - Customers pay their fair share \$500,000

Bulk Supply Procurement, Advanced Rates \$102,000

Data Collection, Staff & In-Field Service \$70,000

Estimate of annual new costs for AMI system - \$50,000

Net Annual 'Benefit' \$622,000

Ancillary Benefits (system, service, future)



Advanced Metering Infrastructure

AMI Concerns

- Complaints from residents because of higher bills.
- Costs the customer may have to bear with meter install.
- Data Security
- Will load shedding become mandatory? “Big Brother”
- Environmental Health and RF Frequencies

Solution for environmental issue. Customer can opt out and instead have a different rate schedule with an additional monthly charge for manual meter reading. New meters may still need to be installed.



Advanced Metering Infrastructure

Smart meters will allow for **TIME OF USE RATES**

What are 'Time of Use' rates?

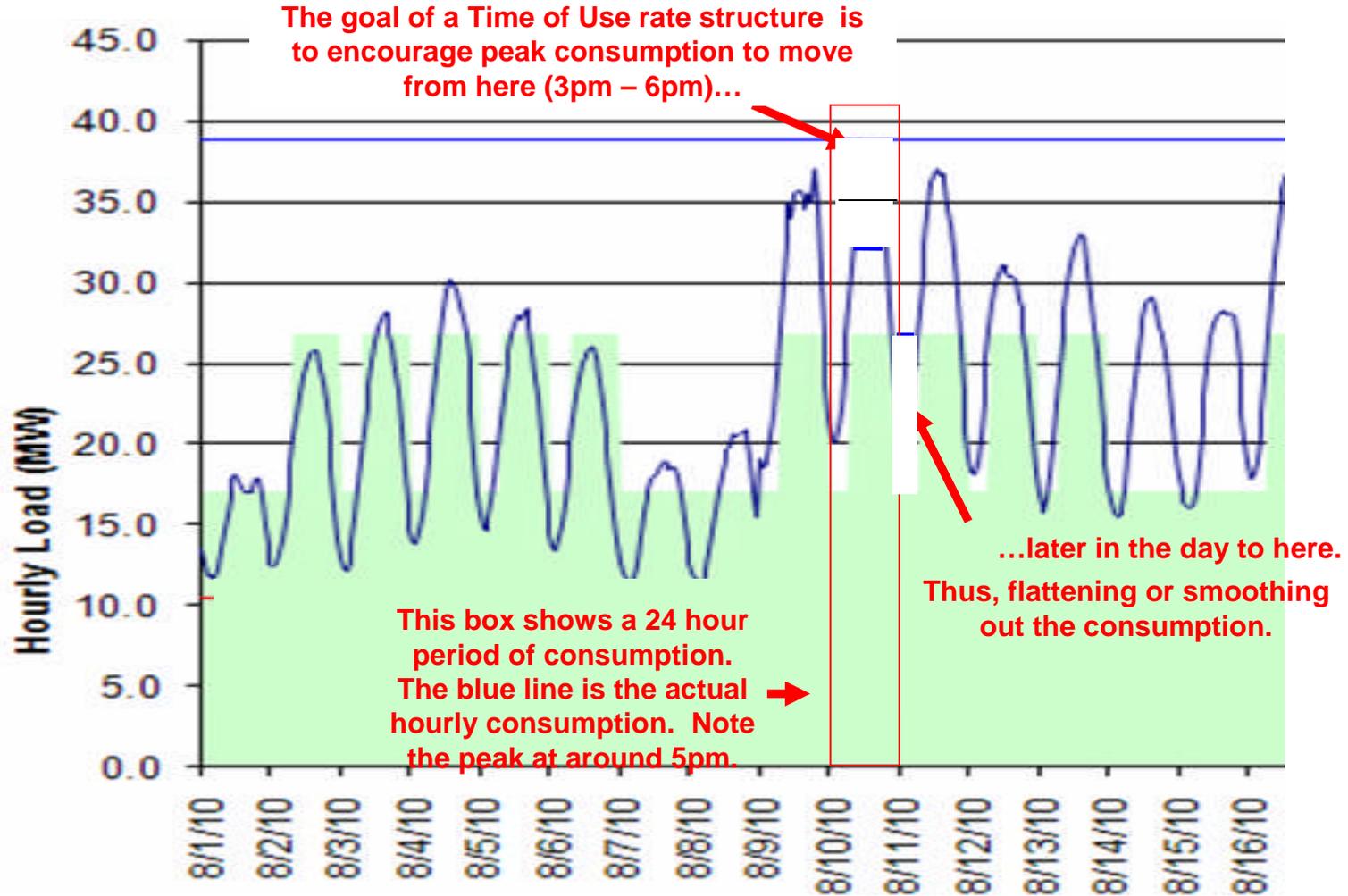
-Higher electric rates on summer days and lower electric rates in the evening.

Benefits

- Gives residents an opportunity to **REDUCE** their electric bill.
- Reduce reliance on the oldest, dirtiest power plants (more later on this).
- Reduce risk by allowing the Borough to sell the electricity the same way the electricity is sold to the Borough.



Advanced Metering Infrastructure



Advanced Metering Infrastructure

Next Steps

- RFP to go out in 8 weeks with responses due 60 days later.
- Follow up report with recommendations after **RFP is reviewed by committee** (Jim Burnet, Curt Wilson, Mike Piano, Bob Vogel, Sal Debiasse, Jim Sanderson)



Advanced Metering Infrastructure

Questions?



Next topic...

Voluntary Demand Response



Voluntary Demand Response

Attention

Madison Electric Customers!

Would you like to...

\$ave on your electric bill?

\$ave on your taxes?

\$ave the planet?

Sign up to be a Curtailment Volunteer!

Voluntary Demand Response

On the very hottest summer days, when the grid is stressed, two things happen...

1. The power companies bring extra power plants on line to satisfy demand. The plants are often the oldest, dirtiest and most inefficient plants in the system. It is very expensive to maintain and operate these plants.
2. This increases the cost of electricity significantly.



Madison pays \$16 million a year for electricity. Does anyone in the audience want to guess how much of that bill is for PEAK SUMMER DEMAND?...



Of the \$16 million dollar bill, over \$3 million is paid in demand charges. This fee keeps the extra power plants open and available during the peak summer days.

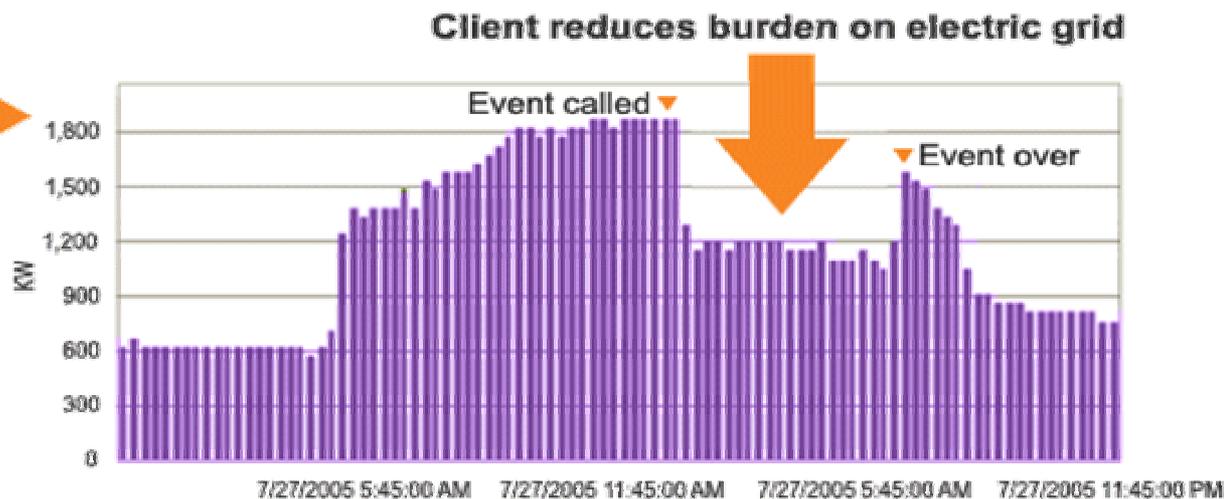
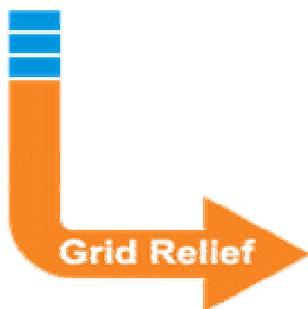
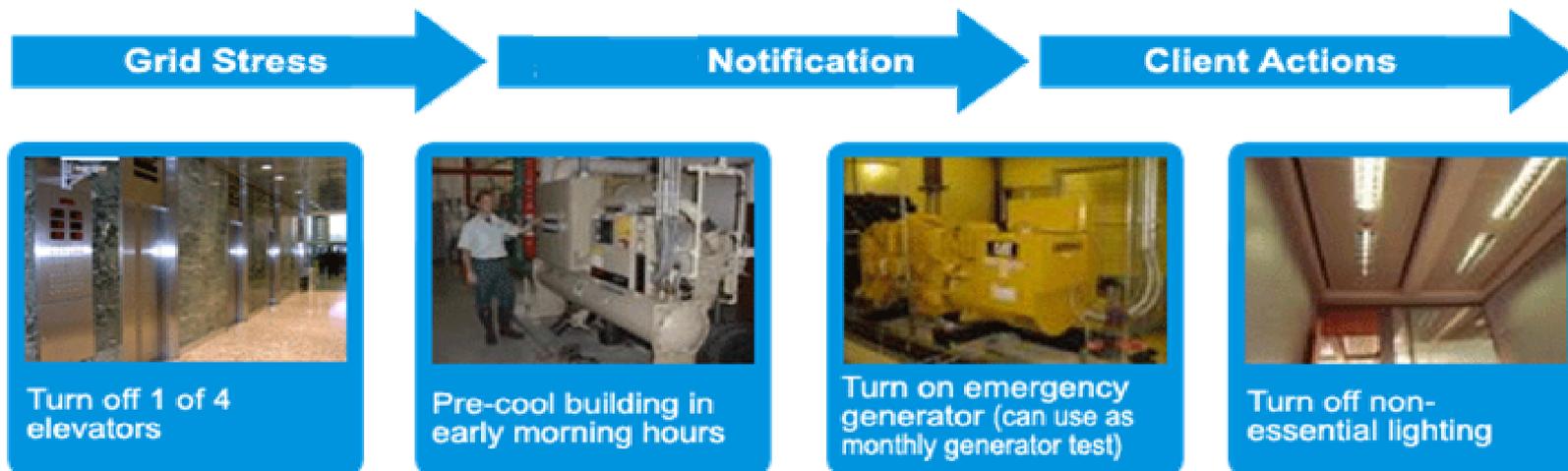
Voluntary Demand Response

We pay over \$3 million a year in peak demand charges.

If residents and businesses voluntarily reduced their electric consumption for just a few hours on the hottest days of the year, Madison could save \$80,000 or more. These savings could help reduce electric rates AND help reduce property taxes.

We will be launching a program where notifications will be sent out on the 8 or 9 days during the summer, asking residents to voluntarily reduce their electric consumption.

Voluntary Demand Response



Voluntary Demand Response

Question: Does anyone know the traditional time of the day when the electric load is at its peak?

Answer: This may surprise you, but the peak is NOT 1-2pm when the temperature is the hottest. It is usually a few hours later between 3pm and 6pm.

Voluntary Demand Response

HOW WOULD THE PROGRAM WORK? Messages would be blasted via the Shop Madison eblast, Nixle and (with BOE blessing) the Board of Ed Honeywell System.

Sample message: “Good morning, this is a message from the Madison Electric Utility. Later today we expect the electric grid that serves Madison to experience very high energy demand. During the hours of 3 to 6 pm today, please consider turning off any unnecessary lights and electronics, postponing the use of major appliances until after 7:00 pm and temporarily raising your air conditioning unit to 77 degrees. We thank you very much for your cooperation and have a great day.”

Voluntary Demand Response

The program is **VOLUNTARY**.



\$ave on your taxes

\$ave on your electric bill

\$ave the planet!

QUESTIONS?

Third and final topic...

Residential Solar Electric Rates

Presented by
Andy Bennett
Betsy Uhlman

Residential Solar Electric Rates

Why encourage Solar with Net Metering Rate Structure?

- NJ views solar power as a "beneficial use".
- NJ sets policies to encourage solar power use.
- Renewable portfolio standards goal of 22.5% by 2020.
- Increased support for Solar Energy Credits (SREC's) pending in legislature.
- NJ #2 in nation in solar installations, other municipal utilities lead Madison's 5 or 6, no municipal installations.
- Sustainable Jersey program support.

Residential Solar Electric Rates

Madison's Current Solar Pricing Model

Two uni-directional meters are installed

One records electricity drawn (consumed) from the grid

The other records excess electricity generated (produced) and fed back into the grid.

The user pays retail rate (\$0.19/kWh) for the electricity they consume

Madison purchases excess production at its avoided cost (wholesale rate=\$0.09).

We are asking Council to consider a different rate structure that instead ENCOURAGES residential solar installations.

Residential Solar Electric Rates

- Because of the current, prohibitive rate structure, Madison is behind our neighboring towns in the number of residential solar installations.
- We are asking the Council to consider a rate structure that would encourage residential solar.
- The new rate incentive is expected to cost the town less than \$20,000 a year. (Most likely the cost will be less than \$5,000 a year.)
- Council will have the option to reduce or eliminate the incentive in two years when the new Time of Use rate structure is introduced.

Residential Solar Electric Rates

Benefits

- The average solar installation will save Madison approx \$60/year in Peak Demand charges
- Reduce load on infrastructure by producing when demand is high, and consuming when it is low
- Improved image as a 'green' community

Residential Solar Electric Rates

Questions?