



Economic and Operational Benefits of AMI Infrastructure

Comments before the
Pennsylvania Public Utility Commission

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Automatic Meter Reading Association
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AMRA History

- Formed in 1987 as a not-for-profit corporation under IRC 501 (c)(6) to inform, educate and promote technology and business system and solutions that provide remote access to utility consumption data.
- Founders came from utilities, carriers and vendors seeking a forum to discuss and focus on providing these solutions.
- Membership is about 1,200 professionals from utilities and corporations involved in AMR/AMI
 - PPL, PGE, WPS, NU, Southern Company, SCE, Itron, DCSI, Cellnet



AMRA Mission

AMRA is an industry association whose members own, manage, provide and/or support automated metering systems, related technologies and the data acquired.

AMRA's purpose is to foster a favorable business, regulatory and technical environment in which its members will succeed.



Objective

- Describe demonstrated benefits of operating networks
- Provide a context for the Commission's further deliberation



Distinctions

- Mobile Systems
 - Economical
 - Absence of fixed communication network between end point and receiver
 - Benefits typically related to revenue cycle
 - Reduced meter reading costs, improved customer service, revenue protection
- Fixed Network
 - Higher Costs
 - Additional functionality and value
 - Two way communication-close to real time
 - Interval data, including daily
 - Communication platforms: radio frequency/power line carrier/bpl/telephone lines



Definitions

Automated Meter Reading (AMR) –

The ability to collect aggregated energy or water usage automatically via communications hardware, including wireless radio frequency (RF), power line carrier, and other telecommunications devices. Some have narrowed the definition of AMR to “mobile” technologies such as handheld (walk-by) or drive-by devices.

Advanced Metering Infrastructure (AMI) –

Emerged out of California when the state began its ongoing metering initiatives several years ago and has since spread throughout the industry. AMI includes the communications hardware and software, advanced meters and all data management systems necessary to store, validate and transmit the vast amount of data that will be collected via a true advanced metering system.

Source: Chartwell AMR Report, 11th Edition, November, 2006



Growth in AMR units

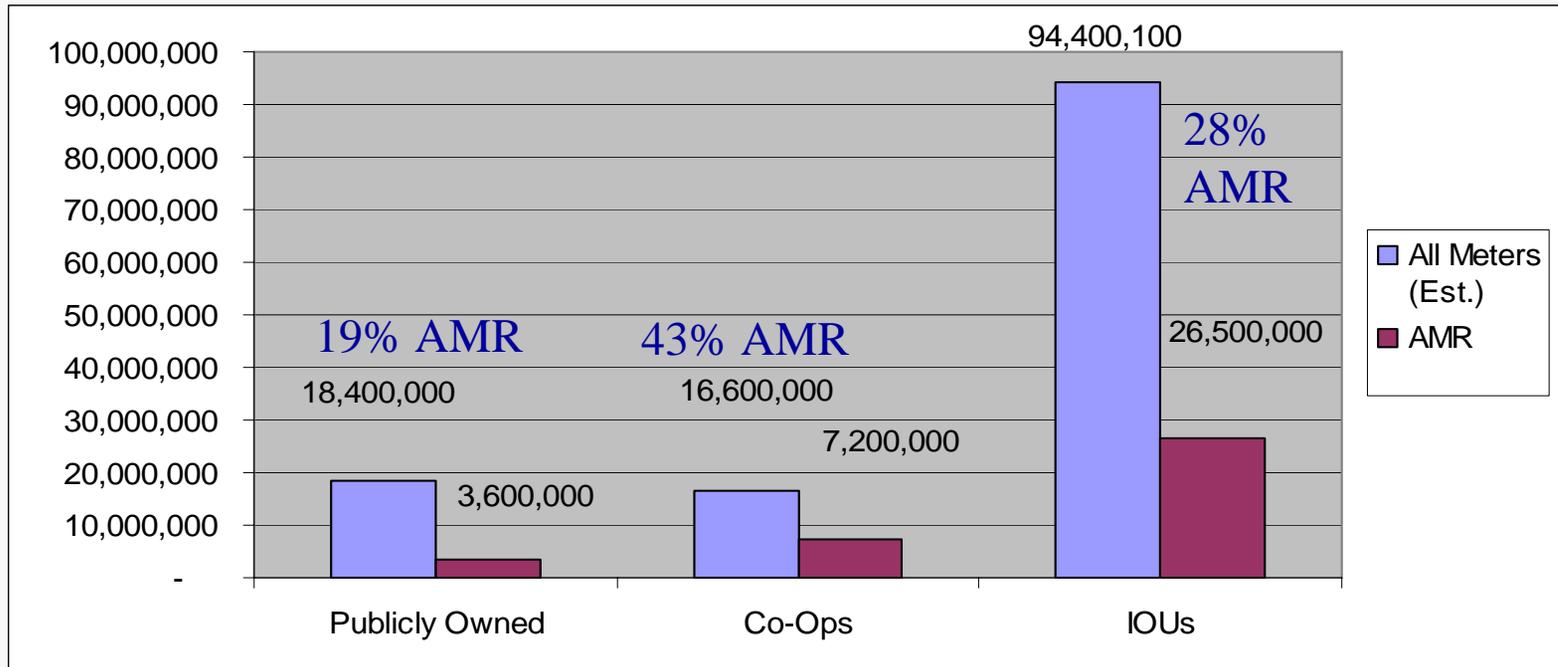
	Annual Growth	Overall Market Penetration
1995	45.3%	9,150,000
1996	28.7%	11,777,000
1997	26.9%	14,940,000
1998	11.7%	16,689,000
1999	15.0%	19,186,000
2000	28.8%	24,707,000
2001	34.0%	33,102,000
2002	16.7%	38,646,000
2003	18.3%	45,726,000
2004	20.1%	54,916,926
2005	11.5%	61,211,804
2006	15.7%	72,611,000
2007*	16.6%	87,100,000
2008*	17.7%	105,800,500
2009*	15.9%	125,800,000
2010*	6.1%	150,000,000

*Projected

Source: Chartwell AMR Report, 11th Edition, November, 2006



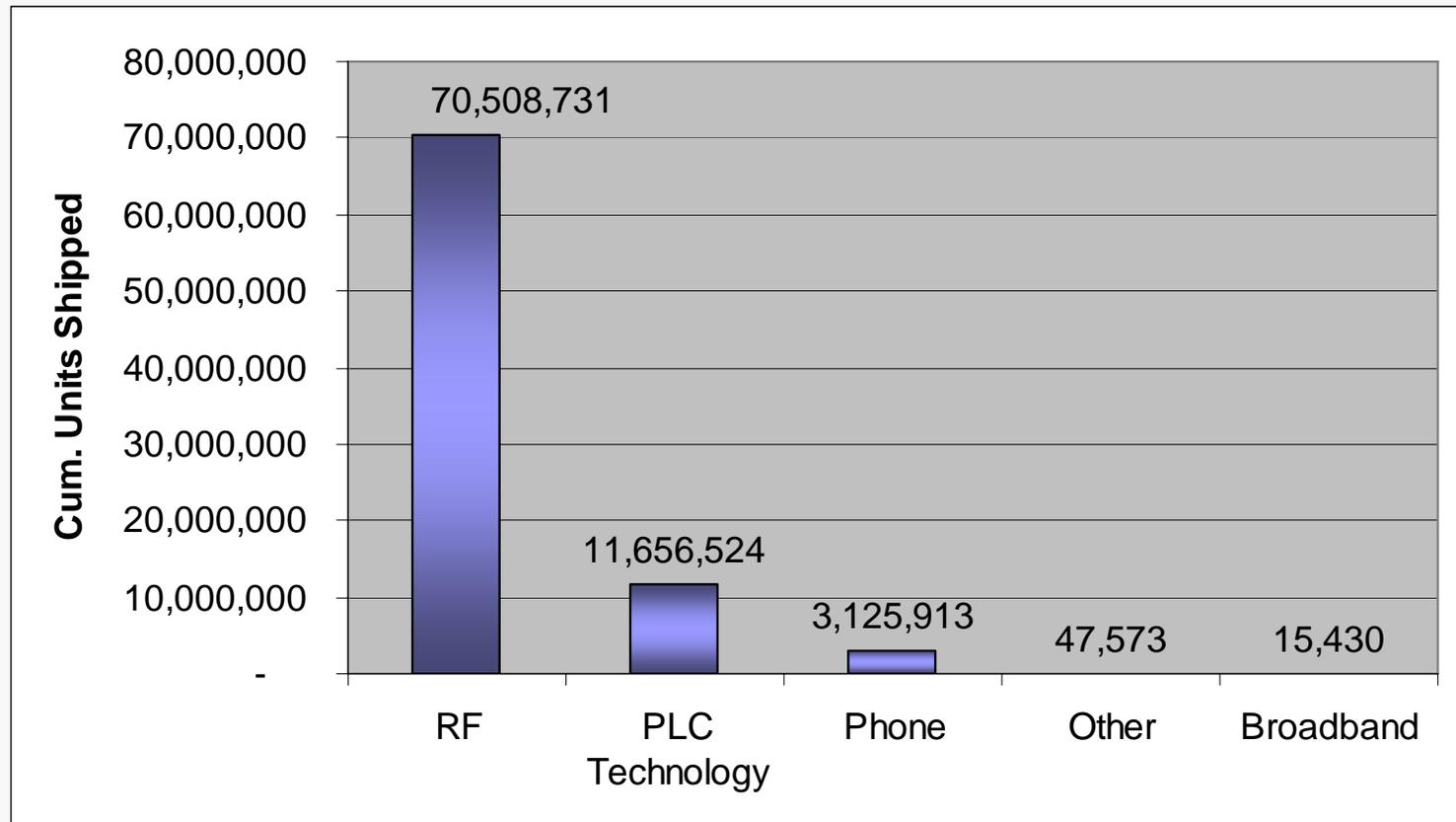
Electric Market by Ownership and Penetration of AMR/AMI



Source: The Scott Report – AMR Deployments in N.A. – 2006 Data



AMR/AMI Technologies



Source: The Scott Report – AMR Deployments in N.A., 10th edition – 2005 Data

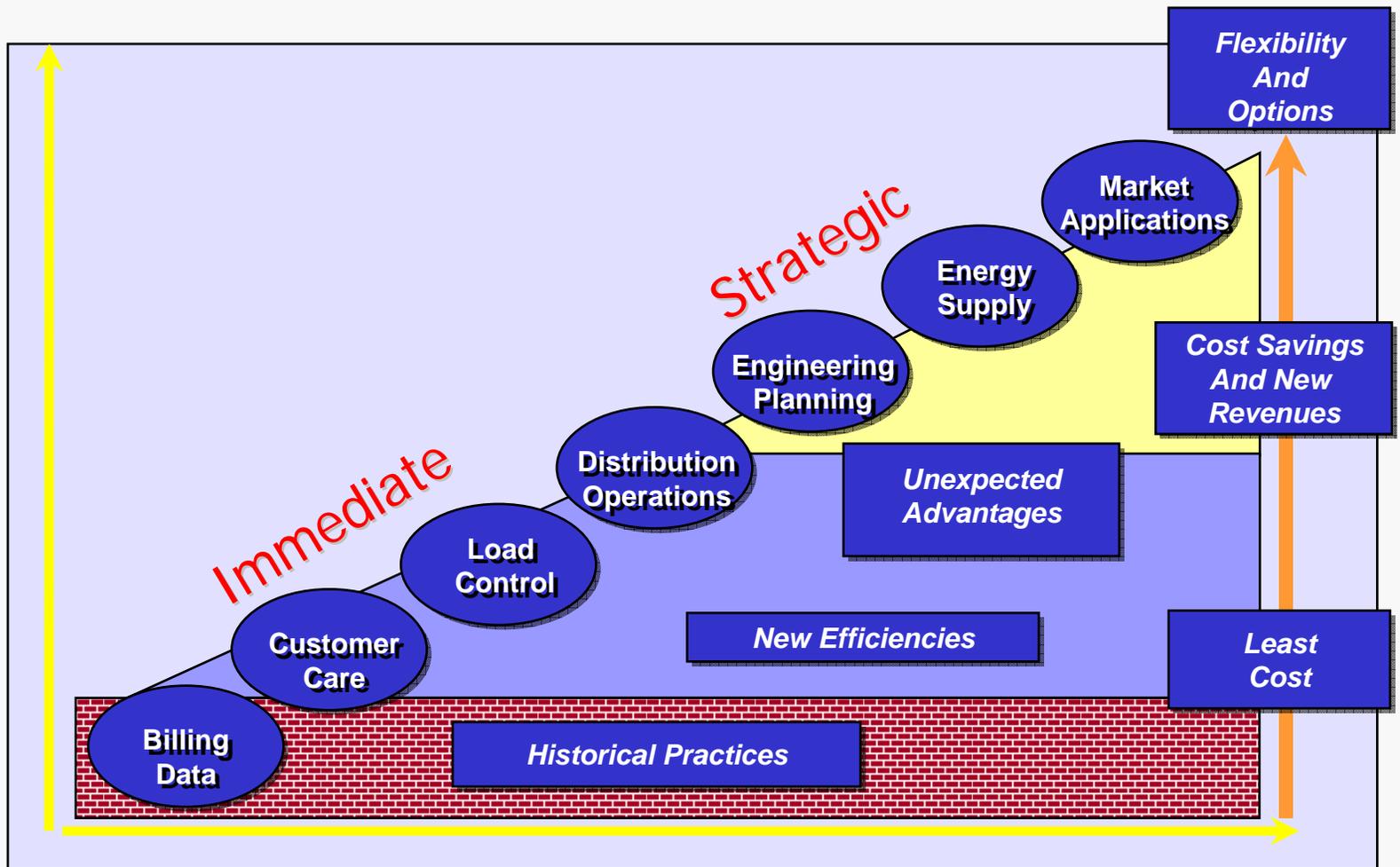


Why Utilities Use AMR/AMI

- Revenue Cycle
 - Avoided costs of monthly reads
 - Call Center cost reductions
 - Special Reads cost reductions
 - Installation check cost reductions
 - Improved revenue recovery (theft detection)
 - Improved cash flow
- Operational Benefits
 - Improved billing processes/results
 - Improved compliance performance
- Outage Management
- Strategic Platform
 - Time-of-Use Rates
 - Forecasting
 - Asset Management
 - Customer Communication



Value-Added AMR/AMI Uses





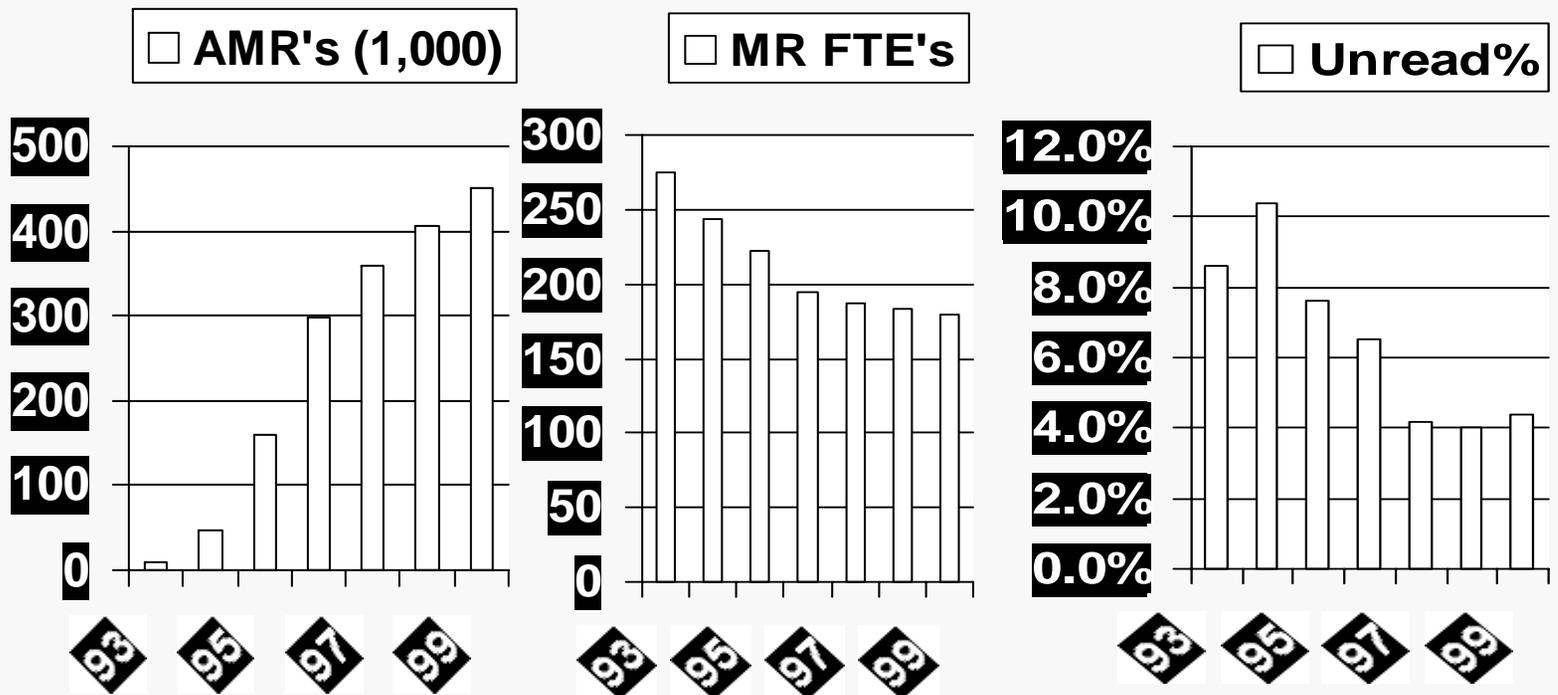
Benefit Overview

- Revenue Cycle
 - Reduced meter reading costs
 - PPL eliminated all meter reading and related supervisory positions- 175 positions/\$16 million annual payroll, overheads, vehicle savings
 - WPS = 106 positions, 71 vehicles
 - Service Personnel
 - PPL eliminated 46 service personnel/meter installers-\$4.3 annual savings
 - WPS = 10 service positions
 - KCP&L = Eliminated 150,000 trips associated with 'move out' reads
 - UI (United Illuminating) saved \$1M in one weekend remotely programming TOU calendar



AMR Benefits

NU Deployment 1993-99





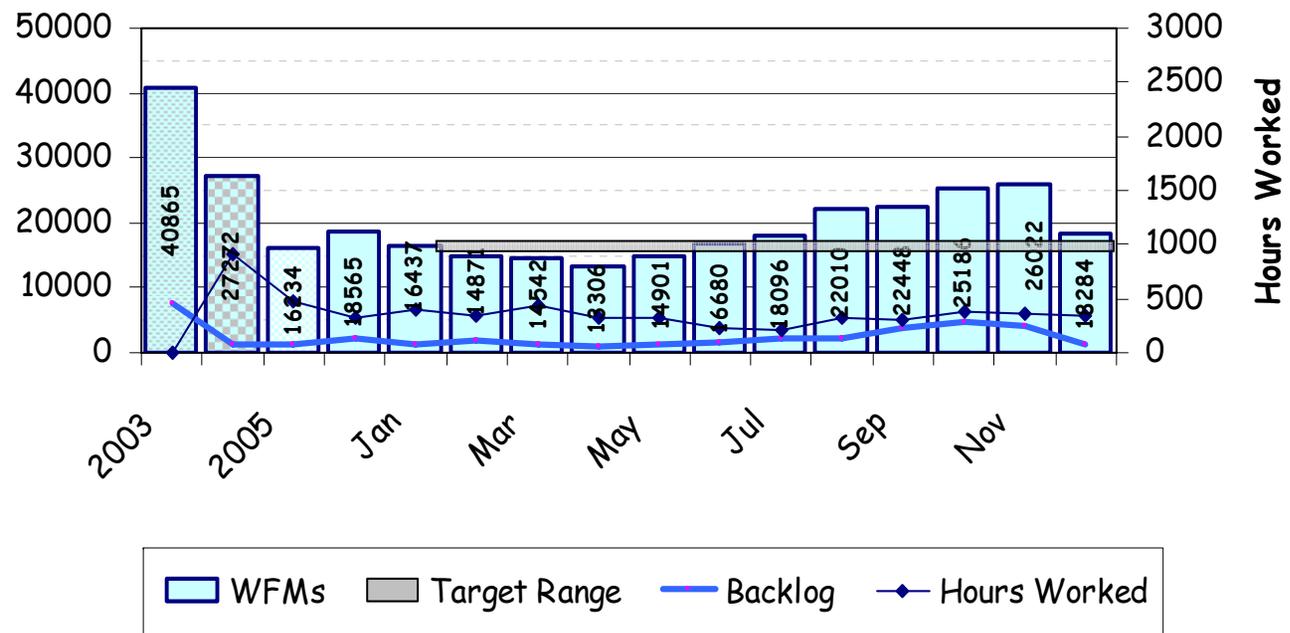
Benefits Overview Cont'd.

- Call Center Benefits
 - AMI virtually eliminates estimated bills (and related calls)
 - PPL experience allowed initial reduction allowed reduction of 7-10 service representatives-annual savings of \$400,000
 - WPS estimates annual savings in excess of \$100,000 annually
 - Improved operational performance
 - Significantly improved compliance performance
 - Significantly improved billing accuracy and throughput



Billing WFMs Completed

Steady State Target Range - 16,000 - 17,500



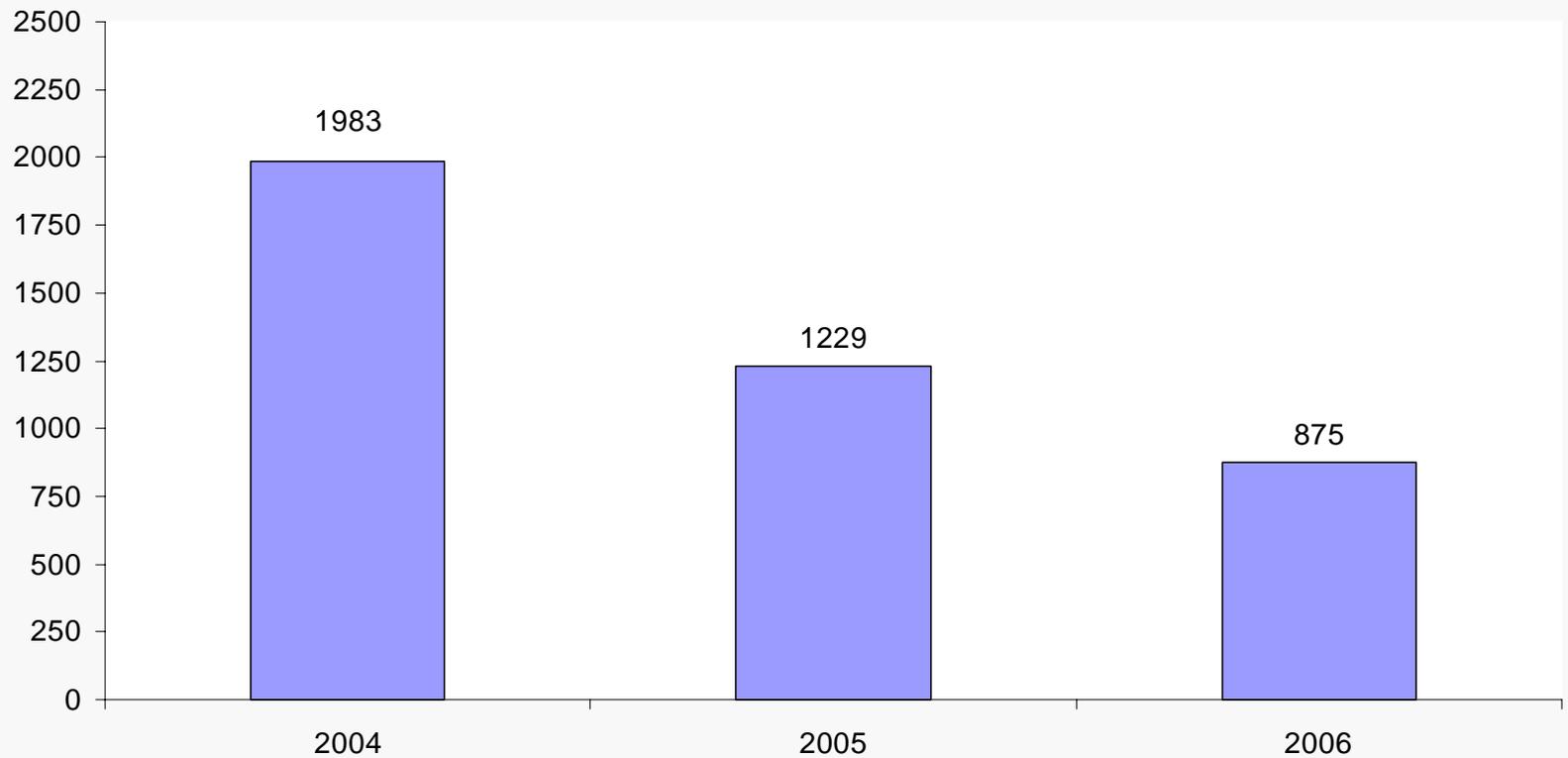


Savings: Manual Billing

- Manual Billing Savings
 - WPS = \$250,000 annual savings and growing
 - PPL = Similar savings



PUC Informal Complaints PPL Experience







01/29/05	Sat	24808	24720	88	9.878
01/30/05	Sun	24849	24808	41	9.878
01/31/05	Mon	24849	24849	0	9.878
02/01/05	Tues	24894	24849	45	9.878
02/02/05	Wed	24945	24894	51	9.878
02/03/05	Thurs	24983	24945	38	9.878
02/04/05	Fri	25012	24983	29	9.878
02/05/05	Sat	25012	25012	0	9.878
02/06/05	Sun	25012	25012	0	9.878
02/07/05	Mon	25012	25012	0	9.878
02/08/05	Tues	25039	25012	27	9.878
02/09/05	Wed	25064	25039	25	9.878
02/10/05	Thurs	25087	25064	23	9.878
02/11/05	Fri	25114	25087	27	9.878
02/12/05	Sat	25114	25114	0	9.878
02/13/05	Sun	25114	25114	0	9.878
02/14/05	Mon	25114	25114	0	9.878
02/15/05	Tues	25152	25114	38	9.878
02/16/05	Wed	25178	25152	26	9.878
02/17/05	Thurs	25204	25178	26	9.878
02/18/05	Fri	25227	25204	23	9.878
02/18/05	Fri	25227	25227	0	9.878
02/19/05	Sat	25227	25227	0	9.878
02/20/05	Sun	25227	25227	0	9.878
02/21/05	Mon	25227	25227	0	9.878
02/22/05	Tues	25291	25227	64	9.878
02/23/05	Wed	25349	25291	58	9.878
02/24/05	Thurs	25415	25349	66	2.966
02/25/05	Fri	25484	25415	69	9.418
02/26/05	Sat	25549	25484	65	9.418
02/27/05	Sun	25624	25549	75	9.418
02/28/05	Mon	25691	25624	67	9.418
03/01/05	Tues	25750	25691	59	9.418
03/02/05	Wed	25773	25750	23	9.418





Diversion / Revenue Protection Benefits

- PPL example
 - \$2900 recovery
 - Industry (EEI) estimates 1-3%
 - 1% theft at PPL = \$40.6 million
 - .25% theft at PPL = \$10 million
- Vacant Accounts
 - KCP&L
 - Vacant account monitoring = \$1 million annual benefits
 - PPL
 - \$1.6 million annual benefit
 - Additional \$.5 million with MDM solution



Outage Management

- Growing experience with use of fixed networks and storm management
 - PPL closes 6% of outage jobs/ \$1.7 annual million avoided cost
 - WPS estimates its outage savings at \$10-15,000 storm/location
 - PECO/EXELON
 - \$.5 million savings in single storm (Isabel-'03)
 - Approximately \$.5 million annual operating savings
 - Operational improvements
 - » CAIDI reduction of 1.5 to 2 minutes-faster ID
 - » Additional 3.5 reduction-power restoration
 - » 15 minute reduction in analysis times
 - Austin Energy saves 120,000 truck rolls (\$70/roll)



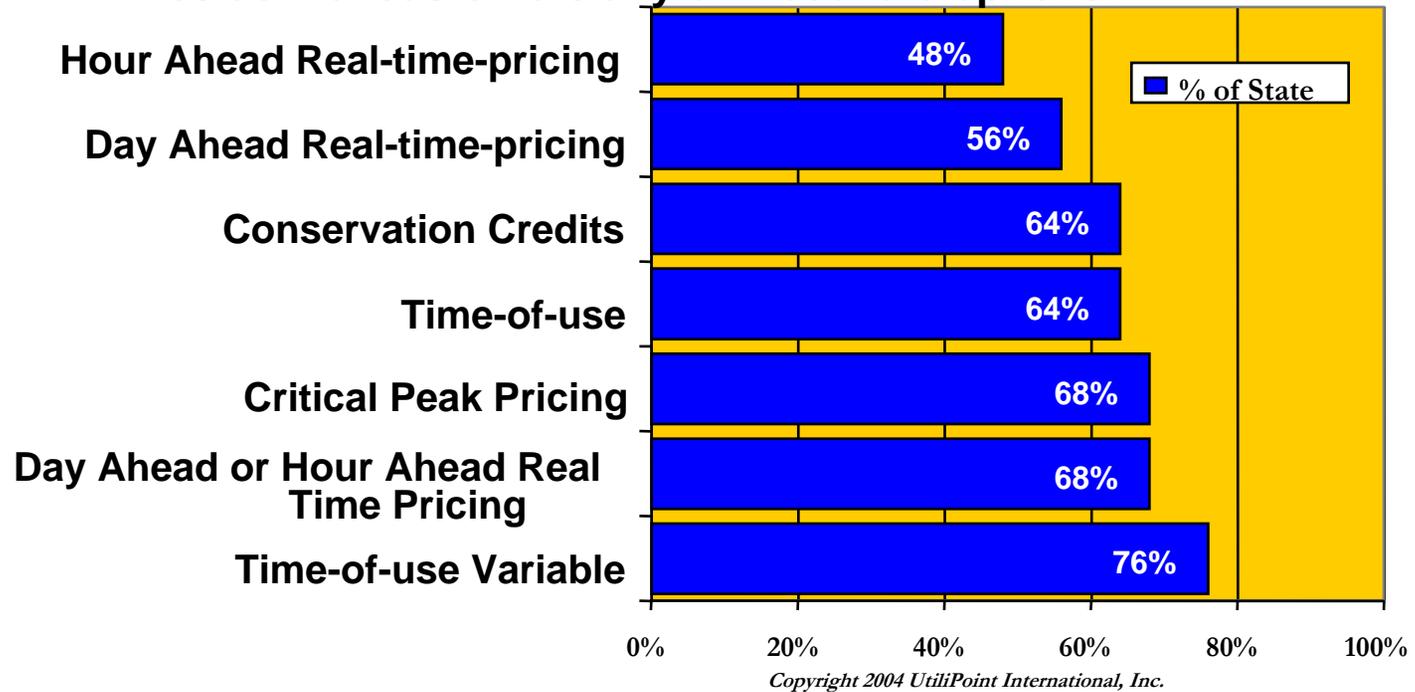
Time of Use Rates

- Infrastructure to support TOU historically available
 - Limited customer classes able to take advantage
- Fixed network systems allow everyone to take advantage of time variant rates



Regulators Support TOU or dynamic Rates for Residential Customers

Would the Commission support plans to offer residential customers any of these rate options?



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Puget Sound Energy TOU Pilot

- ~300,000 Residential Customers – May 2001 to June 2002
- Results
 - a 5%-6% shift of energy usage from peak periods to non peak period
 - ~1% conservation effect from those customers on TOU rate
 - peak capacity savings of ~30-40MWs.



Conclusion

- Deployed AMR/AMI infrastructure have typically met operational expectations
- Implementations not disruptive to customers
- AMI has the capacity to serve as a strategic platform