



# Advanced Metering at PacifiCorp

Presented at Oregon PUC Workshop  
January 6, 2005

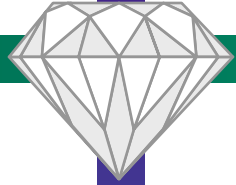
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Metering Assets and Technology

# AMR Timeline



- ▶ 1989 – Field trial of RF meters
- ▶ 1998 – Residential business case
- ▶ 1999 – C&I business case
- ▶ 2002 – AMR Technologies Report
- ▶ 2002 – Field trial of PLC-1 metering
- ▶ 2004 – AMR business case for specific applications

# AMR Technologies



- ▶ Mobile / Offsite RF
- ▶ Fixed RF Networks
  - ▶▶ Public
  - ▶▶ Private
- ▶ Fixed PLC Networks
  - ▶▶ Pre-pay meters
- ▶ Telephone Networks

# Selected AMR Technologies



## ▶ Application by customer/geographic base

	<b>Residential</b>	<b>Commercial</b>	<b>Industrial</b>
<b>Urban</b>	<i>Mobile RF</i>	Mobile RF	<i>Digital PN</i>
<b>Rural</b>	PLC2	PLC2	<i>Digital PN</i>
<b>Extreme Rural</b>	PLC2	PLC2	PLC2

Notes:

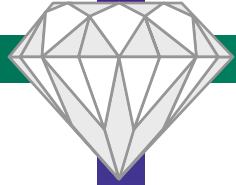
- Digital PN is public networks to replace degrading analog cellular service.
- PLC2 is two-way power line carrier technology

# AMR Benefits



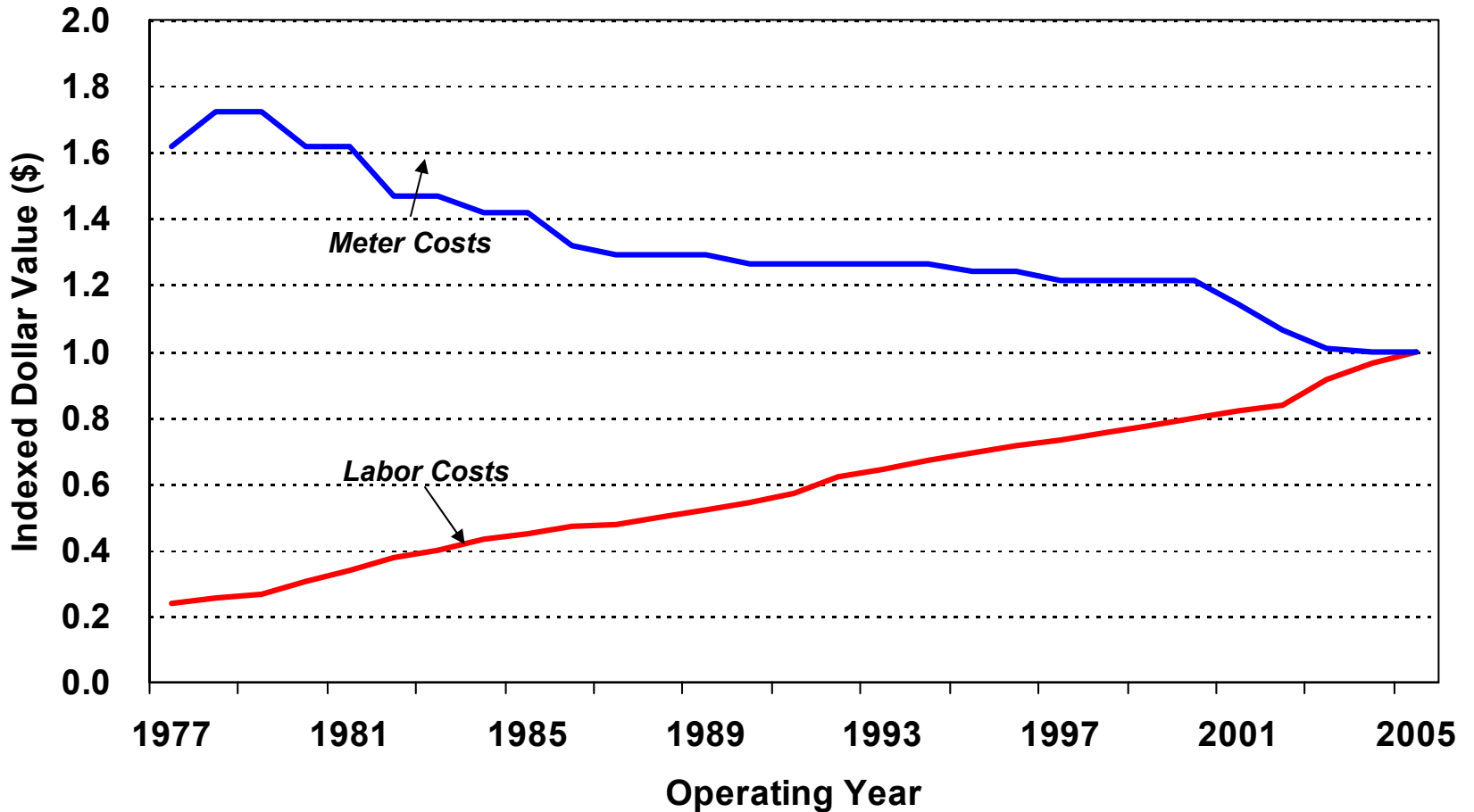
- ▶ Reduced meter reading costs
- ▶ Improved customer service
  - ▶▶ Reduced estimated billing
  - ▶▶ Improved billing accuracy
- ▶ Reduced customer service costs
- ▶ Improved metering accuracy

# Specific AMR Installations

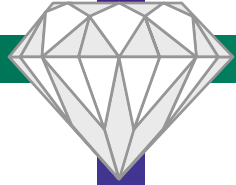


- ▶ Large industrial customers
  - ▶▶ Supports SB1149, Energy Exchange (ENX) and Energy Profiler Online (EPO) programs
- ▶ Safety/access installations
- ▶ High growth residential areas
  - ▶▶ Wasatch Front, UT
  - ▶▶ Bend and Medford, OR
- ▶ Extreme rural applications

# Labor vs. Meter Costs

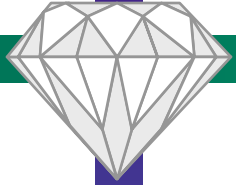


# RF AMR Metering



- ▶ Replaced existing meter reading handhelds in 2002 with RF capable handhelds.
- ▶ Original installations of RF meters were targeted for employee safety and access.
- ▶ Currently installing RF meters in high-growth areas.

# AMR – Current and Future



- ▶ 1989 – Field trial of RF equipped meters
- ▶ 1998 – Residential business case completed
- ▶ 1999 – C&I business case completed
- ▶ 2002 – AMR Technologies Report
- ▶ 2002 – First trial of PLC-1 metering
- ▶ 2004 – AMR business case for specific applications
- ▶ **2004 – Implementation of “Specific” AMR**
- ▶ **2005 – Field trial of PLC-2 metering**
- ▶ **2006 – Replacement of analog communications**

# QUESTIONS

