



# Advanced Metering

Board Retreat, 2/18/09

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# Agenda

- **Overview**
- **Timeline of Advanced Metering**
- **PUCT 34610 – Implementation Project**
- **ERCOT Projects**
- **Questions**

- **Advanced Meter** -- Any new or appropriately retrofitted meter that functions as part of an advanced metering system and that has the features specified in this section.
- **Advanced Metering System (AMS)** -- A system, including advanced meters and the associated hardware, software, and communications systems, including meter information networks, that collects time-differentiated energy usage and performs the functions and has the features specified in this section.
- **Advanced Metering Infrastructure (AMI)** deploys standards-based open architecture to build a network of smart meters that are fully integrated with demand response capability.

**Definitions from Advanced Metering Rule:**

<http://www.puc.state.tx.us/rules/subrules/electric/25.130/25.130.doc>

# Timeline of Advanced Metering Activities

- **2005 Passage of HB 2129 (79<sup>th</sup> R)**

*“In recognition that ...new metering and meter information technologies, have the potential to increase the reliability of the regional electrical network, encourage dynamic pricing and demand response, make better use of transmission and generation assets, and provide more choices for consumers, the legislature encourages the adoption of these technologies by electric utilities in this state.”*

- **2007 PUCT AMS Rulemaking – 31418**

*Revised Substantive Rule 25.130 as related to advanced metering*

*25.130 (h)*

*It is the objective of this rule that ERCOT shall be able to use 15-minute meter information from advanced metering systems for wholesale settlement, not later than January 31, 2010*

- **2007 Passage of HB 3693 (80<sup>th</sup> R)**

*Expressed the intent of the legislature that net metering and “advanced meter data networks be deployed as rapidly as possible.”*

- **2008 PUCT Project 34610**

*6 subprojects (see next slide)*

- **2008 ERCOT projects**

*70057 – Study for Long-term Settlement Solution*

*80027 – Interim Solution for Settlement*

## Six Sub-Projects:

## Schedule:

- |                             |        |                            |
|-----------------------------|--------|----------------------------|
| 1. Interim Project          | —————> | Closed                     |
| 2. Web Portal Project       | —————> | Near Completion            |
| 3. ERCOT Settlement Project | —————> | Open – no current activity |
| 4. Home Area Network (HAN)  | —————> | Ongoing                    |
| 5. Retail Interface Project | —————> | Closed                     |
| 6. Customer Education       | —————> | Closed                     |

## Interim Project:

- **Purpose:** To design, develop and implement interim cost-effective interface and bridging functionality for any installed AMS so REPs may offer products by Summer of 2008 consistent with ERCOT and TDSP capabilities.
- **Status:** Closed. *No market agreement on short-term solution.*

## Web Portal Project:

- **Purpose:** Establish standard AMS data transport, format, communication and acquisition mechanisms. Develop the requirements and prioritize the implementation of the functions of the web portal.
- **Status:** Project underway. *Requirements Developed. TDSPs developed RFP to select a vendor to build the Joint-Portal and Data Repository. Vendor selection should be completed by end of February. Development to begin by April.*

## **Home Area Network (HAN) Project:**

- **Purpose:** To standardize the means of AMS communications with an in-home device consistent with the rule requirements.
- **Status:** Ongoing.

## **Retail Interface Project:**

- **Purpose:** Define and implement the retail market interface changes that may result from AMS.
- **Status:** Closed. *Requirement to post AMS indicator on ESIID displayed on TML. PRR for this going through governance process – currently with TX SET Working Group. Remaining requirements into other projects at PUCT (pre-pay, expedited switch).*

## **Customer Education:**

- **Purpose:** Provide consumer education about how and when customers consume energy, the cost of that energy, and what they can do to lower their bill.
- **Status:** Closed. *Education dealt with in each TDSP case.*

## ERCOT Settlement:

- **Purpose:** Make available ESIID-specific, 15-minute or shorter interval data from the advanced meters to ERCOT, REP of Record, and Customers.
- **Status:** Open – no current activity. *An interim-solution was developed and approved by the Commission and a PRR 766 was approved by the Board on August 19, 2008.*
- **ERCOT Projects 70057, 80027, and 90007 address ERCOT Settlement**
  - 70057 – study to recommend a long-term solution for settlement (completed)
  - 80027 – system change project to implement interim solution (in progress)
  - 90007 – long-term settlement solution (not yet started)



# ERCOT Projects Related to Advanced Metering

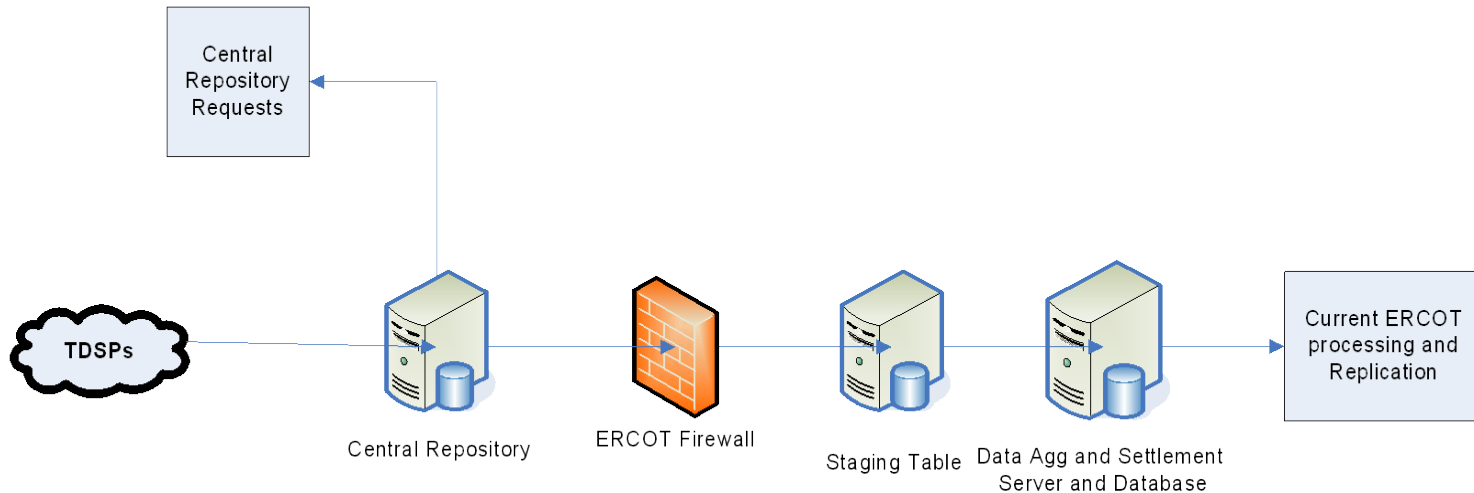
<b>PUCT 34610 Sub-Project</b>	<b>Corresponding ERCOT Project</b>
1. Interim Project	N/A
2. Web Portal Project	N/A
3. ERCOT Settlement Project	<ul style="list-style-type: none"><li>• <b>PR70057_01 AMIT Study for Long Term Settlement Solution</b></li><li>• <b>PR80027_01 Advanced Metering – Interim Settlement Solution</b></li><li>• <b>PR90007_01 Advanced Metering – Long-Term Settlement Solution (not yet started)</b></li></ul>
4. Home Area Network (HAN)	N/A
5. Retail Interface Project	TBD
6. Customer Education	N/A

## **Study Purpose:**

- Recommend a long-term solution for ERCOT to change its systems to accommodate full settlement using 15-minute interval data from AMS, and report when the solution can be implemented.
- Evaluate the use of a central repository of meter usage data that would be utilized by ERCOT and Market Participants for settlement calculations and other reports and recommend any alternate solution(s) if the central repository is not the best solution
- Recommend the implementation approach for the recommended long-term solution.

## Recommendation for Usage Data Flow:

TDSP ⇒ Central Repository ⇒ ERCOT Settlement



## Implementation Executable Timeline



## **Timeline Assumptions:**

1. Timelines above only include execution activities.
2. Timeline does not include system blackout periods at ERCOT.
3. This is a mildly conservative timeline but does not include contingency.

## **Implementation of the central repository could be accelerated:**

1. Phase 1 and Phase 3 would occur first.
2. Phase 2 and Phase 4 could be completed later.
3. The TDSPs could continue to utilize the ERCOT interim solution and also populate the repository.
4. Once Phase 3 and 4 are complete migrate to the repository.
5. Risk: Some rework may be required to sync the design and development required data tables and processes.

## Costs to Implement

Resources						
Infrastructure	AMI	Central Repository	Travel	Sub-total Services	Hardware	Total Estimate
\$980,738	\$1,294,324	\$968,452	\$486,527	\$3,730,041	\$8,775,000	<b>\$12,505,041</b>

## Costs to Support

	Application Support year 1	Application Support year 2	Application Support year 3	Application Support year 4	Application Support year 5
Annual Infrastructure cost	\$1.830M	\$1.830M	\$4.830M	\$2.202M	\$2.202M
Annual Resource Cost	\$2.5M	\$2.5M	\$2.5M	\$2.5M	\$2.5M
<b>Total Annual costs</b>	<b>\$4.33M</b>	<b>\$4.33M</b>	<b>\$7.33M</b>	<b>\$4.702M</b>	<b>\$4.702M</b>
<b>Total Ongoing costs</b>					<b>\$25.394M</b>

**Total Cost outlay over a five-year period is approximately \$37.9M**

**Caveat:**

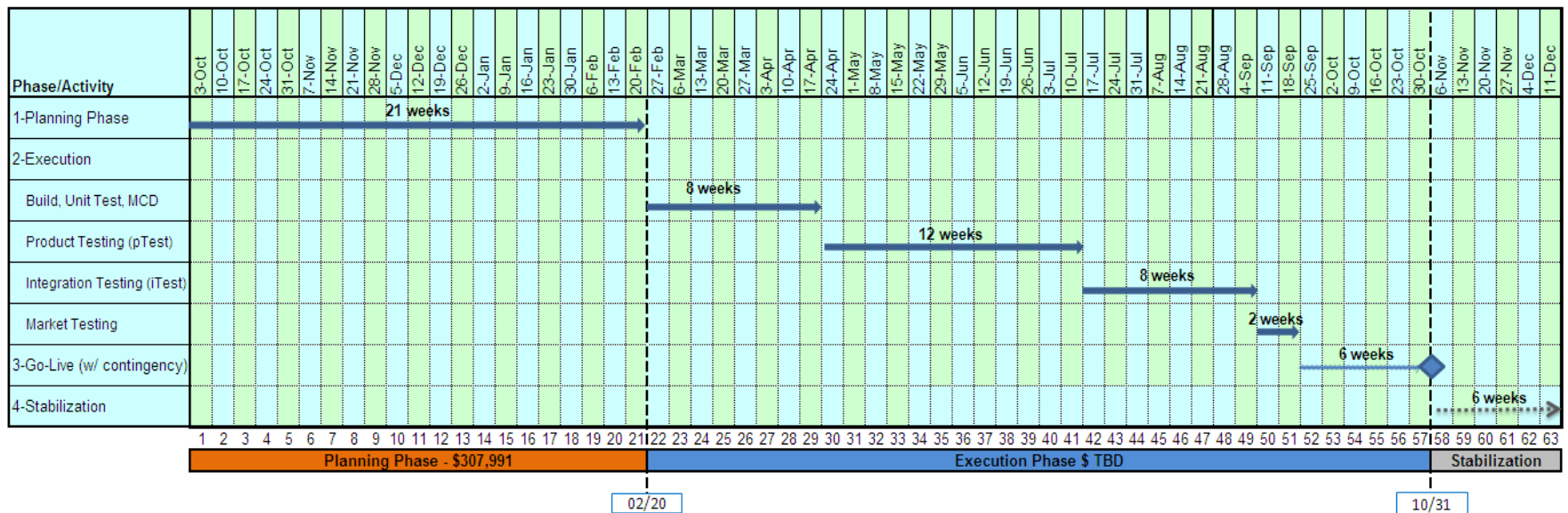
- Study based on indicative cost estimates.
- Includes costs for System management and oversight.
- Does not include costs associated with a web portal as this was out of scope for study.
- RFP process should drive more detailed requirements and costs to support.

# PR80027 Advanced Metering – Interim Settlement Solution

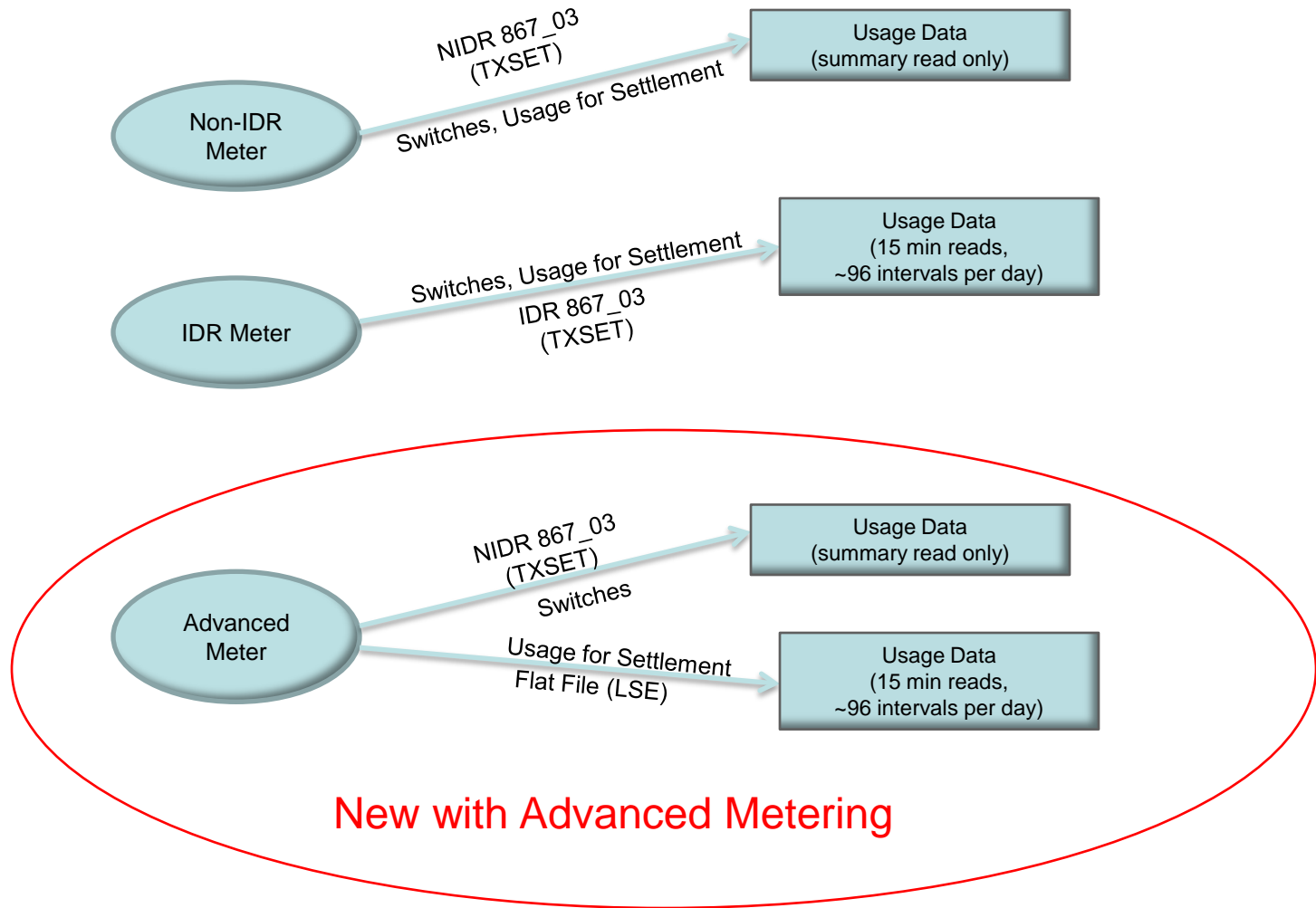
**Scope:** Modify ERCOT systems to provide for the settlement of 15-min data received from advanced meters including small distributed renewable generators. Source: PRR766, PRR756

**Budget:** 2008 PPL Budget \$500k - \$1M

## High Level Schedule:



## Data Transport:





<b>Milestone</b>	<b>Baseline Date</b>
Planning Phase Begins	09/29/2008
Business Requirements Complete	12/02/2008
ERCOT Enhanced LSE Design Complete	12/09/2008
Conceptual Design Complete	01/07/2009
Security Requirements Complete	01/28/2009
Detail Designs Complete	02/09/2009
Test Plan Complete	02/16/2009
<b>Planning Phase Complete</b>	<b>02/20/2009</b>

# Questions?