

Advanced Metering Infrastructure (AMI)

Example Project Valuation Model User Guide

AMI User Guide (Version 1.00)

Date: August 7, 2006

Note: This document refers to the “AMI_Example_Model_v1.00” file

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Model Introduction

INTRODUCTION

This user guide and the associated financial model is intended to assist utilities, public utility commissions (PUCs), regulatory agencies, vendors, and customer advocacy groups in conducting a preliminary value assessment for the installation of an Advanced Meter Infrastructure system by providing an illustrative example model. The example model reflects a combined electric and gas utility, but it can be adapted to reflect either one individually. The user guide will cover the three main categories of worksheets included in the corresponding model. These include:

- Summary worksheets
- Cost worksheets
- Benefit worksheets

For each worksheet, a brief overview is provided with several key considerations for the sections within the worksheets. Users should be familiar with basic Accounting and Excel techniques prior to accessing this example model. This user guide is intended to introduce some of the key attributes of the model; however it will not address every aspect of the model.

SCOPE

There are a variety of analyses which are appropriate when assessing a potential AMI deployment. This document and the associated model represent only a subset of these analyses. A non-exhaustive list of these types of analyses is shown below with an indication of whether or not each analysis is in scope for this model:

Analysis	Description	Included in this model
Cost analysis	Identifies the basic costs of an AMI deployment. May	Yes *

	be derived or based on vendor quotes	
Benefit analysis	Estimates the value potential from AMI for each area of the organization	Yes *
Basic financial metrics	Calculates basic financial measures (NPV, IRR, etc.). Used for preliminary “directional” analysis.	Yes *
Regional–level financial analysis	Enhances model to reflect differences in regions for costs and benefits for varying technologies. Prioritizes deployment to maximize value for minimal cost	Not included
Financial statement analysis	Expanded financial analysis which includes cash flows, net income, and balance sheets	Not included
Regulatory financial analysis	Overlays the impact of the regulatory environment on the model. Used to identify the cost of service benefit or impact on the customer and key regulatory drivers of financial value	Not included
Risk analysis	Identifies sensitivities in value to variation in key inputs	Not included
Investment portfolio analysis	Used to evaluate strategic, financial, and risk considerations across the investment portfolio	Not included

* Simplified versions are included: Not exhaustive

GETTING STARTED

The values shown in this model are for illustrative purposes and are intended only to provide a starting point for analysis. Users are responsible for updating assumptions to meet their own needs and for validating all calculations and results.

In most cases, key inputs are colored **blue** in order to make them more visible. Because values for some years are hidden for formatting reasons, it is critical to show these when updating assumptions.

Users should begin on the “General Assumptions” worksheet of the model. The first assumptions which should be updated include the “Revenue” and “Meter Population to be Automated” lines.

Users should then proceed to complete all assumptions in the “General Assumptions” sheet and all subsequent sheets. The “Project Summary” page can be reviewed while updating the assumptions to view their effects on the project value.

Note that the type of deployment (e.g. Electric, Gas or Combined) and the type of network (mobile, fixed, or combined) will have a significant effect on assumptions, so users should pay close attention to related inputs throughout the model (for example, meter reading “Drive by operators” are required in a mobile AMI solution, but are not needed when only a fixed network is used). Similarly, identifying whether the utility is paying for an item versus a third party should also be noted in appropriate locations in the model (e.g. “Utility Paid”, “Utility Owned” and other similar fields have a “Yes” or “No” option)

Summary Worksheets

COVER PAGE WORKSHEET

Worksheet overview

The cover page displays the title and version number of the model. Refer to this page in order to ensure that you are working from the most recent model revision. Please note that the model available on the internet may be updated at any time.

PROJECT SUMMARY WORKSHEET

Worksheet overview

The project summary worksheet has three main sections:

- Project and financial summary
- Capital cost and benefits
- Net present value calculation

These sections are intended to provide a simple “snapshot” of each area in a consolidated manner.

Consistent with other sheets, this sheet will by default show the first 5 years of deployment, followed by years 10, 15, and 20. This is intended to provide a compact method for viewing and printing the document, however the hidden years can be displayed as needed using standard MS Excel functions.

Project and financial summary section

This section identifies key attributes of the deployment, key financial information, and a brief summary of the costs and benefits associated with the model. Note that the costs and benefits are both expressed as a percentage of the total costs and benefits to provide a high-level measure of relevance.

Capital Cost and Benefits section

This portion of the “Project Summary” worksheet provides an overview of the capital expenditures for electric and gas, O&M expenses, and benefits.

Capital Expenditures

The key areas of cost for both Electric and Gas separately are:

- Meters: This primarily includes the hard meter assets (e.g. meters or modules)
- Network: Includes costs associated with the communication networks
- Installation: Installation costs for Electric or Gas respectively

The “IT integration and Software section” is shared and is not allocated directly to Electric or Gas.

O&M Expenses

The O&M expenses are referenced directly from the “O&M Cost” worksheet

Benefits

The Benefits are separated into the following areas:

- Customer Service
- Distribution Operations
- Revenue Enhancement
- Avoided Capital

Each of the sections above reference the corresponding benefits worksheets

Net Present Value Calculation section

Both electric and gas are separated out into a compact method of computing the un-levered free cash flows. These are derived in an indirect cash flow method, starting with the EBITDA and then flowing through EBIT and ultimately ending with un-levered free cash flows. The NPV and IRR are then calculated based on the assumed discount rate on the “General Assumptions” worksheet.

GENERAL ASSUMPTIONS WORKSHEET

Worksheet overview

The “General Assumptions” worksheet is used to capture key information about the company, project, economy, and financial environment.

Revenue section

Enter the revenues associated with Electric and Gas and for Residential and Commercial as appropriate in “Year 0”. Enter a zero for Gas or Electric if one should be excluded from the model

Meter Population to be Automated section

Enter the appropriate meter counts in year 1. Note that these will then grow or decline in subsequent years based on your assumed meter population growth (See “Meter population growth” section below. Enter a zero for Gas or Electric for the number of meters if one should be excluded from the model. Note that removing either gas or electric can effect the NPV of the other due to allocations of items between both areas.

Deployment schedule section

“Electric” input and “Gas” input:

For both electric and gas, enter the desired number of years for deployment. Note that the cells are formatted to add the word “years” at the end, but the cells accept integers.

“Electric Meters” inputs:

Enter the percentage of meters that will be deployed by year as a percentage of all electric meters (e.g. the “Percent Electric Meters with AMI” line should equal 100% after full deployment). Be careful not to “over-deploy” either commercial or residential meters, for new or retrofit meters. (e.g. you should check that the split that is chosen for deployment does not result in a correct total while actually deploying more commercial or residential meters than those which are actually available)

“Electric Meters with AMI”:

This section is calculated based on the “Electric Meters” inputs above and the total number of meters developed in the “Meter Population to be Automated” section above

“Gas Meters”:

Similar to the electric meters above, enter the percentage of all gas meters for electric and gas which will be deployed by year. Be careful not to “over-deploy” either commercial or residential meters (e.g. you should check that the split that is chosen for deployment does not result in a correct total while actually deploying more commercial or residential meters than those which are actually available)

“Gas Meters with AMI”:

Calculates the number of gas meters for both residential and commercial that will be deployed based on the inputs above

Optional Devices section

This section is used to capture any assumed costs for additional devices including remote disconnect/ reconnect modules, load control devices, and prepaid meters. These should be entered in dollar amounts consistent with the rest of the document (e.g. in dollars thousands ‘000s)

Operating Months in Year section

Enter the operating months in a given year (typically 12 in the U.S.A.)

Meter Read Cycles per Year section

Enter the meter read cycles per year (typically 12 in the U.S.A.)

Meter Population Growth section

This section is used to enter assumptions (in blue) for the growth rate in meters deployed. These should be entered for Electric and Gas and for Residential and Commercial meters. The weighted averages are automatically calculated based on those inputs

Meter Failure Rate with AMI section

Enter the assumed meter failure rate for AMI to identify the needed replacement frequency. Enter as a percent of deployed meters which will fail during that year

Discount Rate section

Enter the discount rate for the project as a percent (Enter only 1 discount rate where shown, not different rate under each year)

Property, Federal and Income Taxes section

Identify the assumptions for taxes annually. The “Effective Tax Rate” is calculated based on these assumptions.

Inflation section

This model allows different inflation rates to be entered for Materials, Labor and Fuel. These should be entered for each year.

Benefits Loading section

This section is used to scale salaries to a fully loaded salary (e.g. to add the cost of benefits such as retirement and health care plans to the base salary). The section is split into straight time and overtime, since the incremental costs for loading on overtime is much lower than that for straight time (e.g. health care costs may not go up with overtime, but others may vary slightly). Enter the appropriate loading factors for Customer Service, Distribution Operations, and Gas Operations respectively.

Cost Worksheets

CAPITAL ELECTRIC WORKSHEET

Overview

The Capital Electric worksheet is used to record all capital allocated to the electric portion of the project.

General Inputs section

The General Inputs section outlines several of the key drivers behind electric costs.

Electric Meters to Automate: The incrementally installed count of meters is calculated based on previous data and is shown under this heading.

The project/ contract lifetime and system deployment period are both calculated values.

Values should be entered for the Automated Read Yield, New Meter Asset Book Life, Retrofit Meter Asset Book Life, and Asset Tax Life. Note that the word “years” is appended to the relevant fields.

The components section is added to allow flexibility for either utility or third-party owned and installed assets. Select “Yes” if the utility pays for and capitalizes the cost of the indicated component. The per-unit cost should also be entered for both Hardware and Installation.

Summary of Capital Expenditures section

Capital expenditures are shown by type of asset in this section. Each of the major asset classes are then included in a depreciation schedule within this section. The primary breakdown of assets is as follows:

- Electric Meters – New
- Installation – New Meters
- Electric Meters – Retrofits
- Installation – Retrofit Electric

- Disconnect/ Load Control Installation
- Disconnect/ Load Control Devices
- Network Allocation (Note: The associated depreciation schedule for this asset is located on the “Capital Infrastructure” worksheet)

New Meter Book Depreciation schedule

This section includes the depreciation schedule for the following items:

- Electric Meters – New
- Installation – New Meters

Retrofit Meter / Load Control Book Depreciation schedule

This section includes the depreciation schedule for the following items:

- Electric Meters – Retrofits
- Installation – Retrofit Electric
- Disconnect/ Load Control Installation
- Disconnect/ Load Control Devices

Tax Depreciation schedule

The tax depreciation is calculated based on the “Total System Equipment” line earlier in this section.

CAPITAL GAS WORKSHEET

Overview

Similar to the “Capital Electric” worksheet described above, the Capital Gas worksheet is used to record all capital allocated to the Gas portion of the project

General Inputs section

The General Inputs section outlines several of the key drivers behind Gas costs.

Gas Meters to Automate: The incrementally installed count of meters is calculated based on previous data and is shown under this heading. Note that it is assumed that Gas is installed using retrofit modules rather than new meters.

The project/ contract term and system deployment period are both calculated values

Values should be entered for the Automated Read Yield, New Meter Growth, Book Life, and Asset Tax Life. Note that the word “years” is appended to the relevant fields.

The components section is added to allow flexibility for either utility or third-party owned and installed assets. Select “Yes” if the utility pays for and capitalizes the cost of the indicated component. The per-unit cost should also be entered for both Hardware and Installation.

Summary of Capital Expenditures section

Capital expenditures are shown by type of asset in this section. Each of the major asset classes are then included in a depreciation schedule within this section. The primary breakdown of assets is as follows:

- Gas Modules
- Module Installation
- Network Allocation (Note: The associated depreciation schedule for this asset is located on the “Capital Infrastructure” worksheet)

Book Depreciation schedule

This section includes the depreciation schedule for the following items:

- Gas Modules
- Module Installation

Tax Depreciation schedule

The tax depreciation is calculated based on the “Total Gas System Equipment” line earlier in this section.

CAPITAL INFRASTRUCTURE WORKSHEET

Overview

This capital worksheet is used to capture the costs of infrastructure components. The names and descriptions for these items will vary by vendor, but include items such as “repeaters”, “collectors”, and other similar devices.

General Inputs section

The model allows up to 5 unique component categories to be included. These should be entered in the blue cells, starting with the new names (replace “Infrastructure Component 1” with a title of your choosing for items 1 – 5). Also, include the expected number of that component which is expected for deployment.

Values should be entered for the Asset Book Life, and Asset Tax Life. Note that the word “years” is appended to the relevant fields.

The components section is added to allow flexibility for either utility or third-party owned and installed assets. Select “Yes” if the utility pays for and capitalizes the cost of the indicated component. The per-unit cost should also be entered for both Hardware and Installation.

The Infrastructure Allocation section will compute the “automatic” allocation of cost based on the number of meters for electric and gas, however manual values can be entered to override the automatically calculated values (leave the manual values at zero if no manual override is desired).

Summary of Capital Expenditures section

Capital expenditures are shown by type of asset in this section. Each of the major asset classes are then included in a depreciation schedule within this section. The primary breakdown of assets is as follows:

- Infrastructure Component 1-5 (Note that these names can be replaced by changing the titles in the “General Inputs” section of this worksheet)
- Network Allocation (Note: The associated depreciation schedule for this asset is located on the “Capital Infrastructure” worksheet)

Book Depreciation schedule

This section includes the depreciation schedule for each of the infrastructure items listed above.

Tax Depreciation schedule

The tax depreciation is calculated based on the “Total Infrastructure Equipment” line earlier in this section.

CAPITAL IT AND IMPLEMENTATION WORKSHEET

Overview

This capital worksheet is used to capture the costs of IT and implementation.

General Inputs section

Values should be entered for the Asset Book Life, and Asset Tax Life. Note that the word “years” is appended to the relevant fields.

The components section is added to allow flexibility for either utility or third-party owned and installed assets. Select “Yes” if the utility pays for and capitalizes the cost of the indicated component. The per-unit cost should also be entered.

Unlike other capital worksheets mentioned previously, this worksheet also includes a place to enter the FTE (Full Time Equivalent) number of personnel needed for each portion of the IT/ Software Implementation. An associated salary should also be added.

Summary of Capital Expenditures section

Capital expenditures are shown by type of asset (implementation cost) in this section. Each of the major asset classes are then included in a depreciation schedule within this section. The primary breakdown of assets is as follows:

- Host Application
- Host Hardware
- Billing Interface
- Customer Service Interface
- Outage Management Interface
- Asset Management Interface
- Other 1: MDM Application
- Other 2: MDM Utility Personnel
- Other 3

Note that “Other 1-3” have been provided to allow the addition of components which are not listed. The MDM Application and personnel are listed in Other 1 and Other 2 but may be omitted if the cost is included elsewhere.

Book Depreciation schedule

This section includes the book depreciation schedule for each of the infrastructure items listed above.

Tax Depreciation schedule

The tax depreciation is calculated based on the “Total Implementation Cost” line earlier in this section.

O&M COSTS WORKSHEET

Overview

This worksheet is used to capture the O&M costs associated with the project.

General Inputs section

The components section is added to allow flexibility for either utility or third-party owned and installed assets. Select “Yes” if the utility pays for the indicated component. The per-unit cost should also be entered.

The Headcount/ Operating Expense section is used to capture the Annual expense associated with various items (if appropriate), the FTE/ Unit equivalents to indicate the number of FTEs or units, and finally the Salary per FTE (if appropriate). Note that the formulas that are in this section may require updating depending on what assumptions are made (e.g. if switching between an FTE driven item to a unit driven item). Please review formulas in this section carefully to ensure they correspond to the type of input listed.

Summary of section

O&M items are shown here to create a total O&M cost. The primary breakdown of O&M costs is as follows:

- Network / System Operations
- 3rd Party Pole Attachments
- Data Backhaul
- Software Maintenance
- Managed Service Read Fee - Electric
- Managed Service Read Fee - Gas
- Monthly Fee - Electric
- Monthly Fee - Gas
- Drive-By Operators
- Drive-By Vehicle Operating Expense

- Other 1
- Other 2
- Other 3

Benefit Worksheets

BENEFIT CONSIDERATIONS

Given that organization structures can vary significantly between utilities, an example organization structure is assumed for this model. Two of the key functional areas that realize benefits from AMI are

- Customer Service
- Distribution Operations

The sections below will more fully outline the groups included in each of these.

CUSTOMER SERVICE BENEFITS WORKSHEET

Overview

The Customer Service Benefits Worksheet identifies O & M benefits from several categories for both Electric and Gas. These include:

- Meter Reading Savings
- Billing Savings
- Credit & Collections (C&C) Savings
- Call Center(s) Savings
- Miscellaneous Savings
- Description (Note that this can be changed to an item of choice)
- Description (Note that this can be changed to an item of choice)
- Description (Note that this can be changed to an item of choice)

Capital savings are also identified for Electric and Gas.

Summary of Customer Service Savings section

This section summarizes the benefits associated with Customer Service and is separated into two primary sections, each of which are separated into both Electric and Gas:

- O&M Savings
- Capital Savings

Each of the line items within these sections are referenced from separate schedules on the Customer Service Worksheet as noted on the corresponding footnotes.

Meter Reading Savings section

The Meter Reading Savings section identifies the direct savings in the meter reading area that are associated with an AMI deployment (For example: Labor, overtime, telecommunications, etc.) . This section is calculated based on items on the General Assumptions worksheet and the Meter Reading Budget worksheet. Further detail is available on the footnotes within the Meter Reading Savings section.

Billing Savings section

AMI will increase bill accuracy and reduce billing errors. This results in a corresponding reduction in the labor associated with resolving these issues. Although this section is largely driven by assumptions elsewhere in the model, assumptions for the FTEs (Full Time Equivalent) time and associated employee salaries is a required input in this section. Further detail is available on the footnotes within the Billing Savings section.

Credit & Collections (C&C) Savings section

Savings can be realized throughout the Credit and Collections organization. This section splits the savings into several primary categories:

- C&C Activities Savings (e.g. Theft investigations, field collections, etc)
- Overtime
- Benefits loading
- Uncollectible Expenses (For Gas & Electric)

- Costs of Good Sold (e.g. the variable energy production costs) for Gas & Electric

For the “C&C Activities Savings”, it is important to add the FTE equivalent time for the events and the associated salary per FTE. Further detail is available on the footnotes within the Credit & Collections section.

Call Center(s) Savings section

Similar to savings in Credit and Collections, AMI can reduce excess call volume of various call types. Key input variables for this are included at the bottom of the section and include the number of anticipated calls per year which can be avoided by call type. The Average CR productivity and wage rate is then used to estimate the reduction in labor costs. An alternative method of quantifying the cost savings of reduced call volume can be achieved if a “cost per call” is known (e.g. if the call center is outsourced). This approach is referenced in footnote b. This cost per call value should be left blank if not known (e.g. a similar number is calculated from the data provided in the first footnote. Further detail is available on the footnotes within the Call Center Savings section.

Miscellaneous Savings

This section is used to capture other savings from AMI. The example shown in the model includes the following:

- Reduction in Escalated Complaints
- Reduction in Regulatory Penalties
- Worker’s Compensation Insurance
- Legal Fees
- Description (Note: This is a placeholder for any other item that is appropriate)

Further detail is available on the footnotes within the Call Center Savings section.

Meter Reading Capital Savings

Capital costs in the meter reading area which can be avoided with AMI are included here. The example shows avoided costs associated with hand-

held devices and vehicles. Two additional fields are available (currently titled “Description”) which can be changed.

DISTRIBUTION OPS SAVINGS WORKSHEET

Overview

The Distribution Operations Savings worksheet will incorporate savings in both O&M and Capital areas. These savings are discussed further in this section

Summary of Operations Savings section

This section provides an overview of each primary value driver for Distribution Operations. It is organized as follows:

O&M (For Electric and Gas)

- Remote System Monitoring
- Meter Inventory Operations Savings
- Distribution Meter Reads

Capital Savings (For Electric and Gas)

- Remote System Monitoring Savings
- Meter Inventory Operations Savings
- Distribution Asset Management

In addition, several fields (currently titled “Description” or “Other”) can be updated to reflect other items for both the O&M and Capital Savings areas.

With the exception of these custom “Description” fields, these are largely referenced to the appropriate schedule within this worksheet. See the footnotes in this section for detailed references.

Note: Demand Response benefits can also be realized including, but not limited to, increased revenue, reduced capital, and lower energy costs. These have not been included in version 1.00 of the model. Users may, however, choose to incorporate demand response or other benefits in the model where appropriate for a given analysis.

Remote System Monitoring Savings section

This section quantifies the benefits of having better information about your network due to AMI. This includes reductions in restoration times associated with day-to-day trouble, storm outages, and re-dispatching. By having an AMI solution in place (depending on the chosen technology), a utility can more quickly identify outage areas and can, in some cases, identify if a meter has power (including voltage) on-demand prior to having repair crews leave an area. These types of efficiencies reduce the amount of time crews spend in the field, resulting in lower labor costs and improved customer satisfaction.

The key O&M elements identified on this sheet include:

- Day to day trouble
- Storm trouble
- Re-dispatching

A worksheet for these areas is included in the footnote section to further identify calculations (e.g. number of events, costs per events, etc.)

In addition, capital savings lines are available for electric and gas. See the footnotes in this section for detailed references.

Meter Inventory Operations Savings section

Savings can be derived if new meters are deployed that have AMI capabilities since the meters are a new product that is replacing an often times old electromechanical meter. AMI Electric meters can be both solid-state and electromechanical, so this example assumes that new meters are solid-state. Note that Gas meters are generally retrofitted and will have different benefits.

O&M benefits listed include:

- Meter Testing
- Meter Refurbishment
- Several optional items (“Description” fields)

It is possible to reduce testing requirements by moving to newer and solid state meters, this will reduce the associated testing costs.

Similarly, meter refurbishment can also be reduced or eliminated depending on the type of deployment

Capital savings include

- Avoided new meter purchases
- Several optional items (“Description” fields)

The savings would be derived by a difference between the replacement rate and cost of the new meters versus the existing replacement rate of the old meters.

Distribution Asset Management Savings section

Deploying AMI can allow more sophisticated load analysis which can result in more “right-sizing” of assets (to prevent over or under investment in a new asset or to monitor load on existing assets). This worksheet is intended to provide a location to realize these saving. The section is separated into O&M labor savings and Capital Savings. Several illustrative items have been added to each section, including:

- Substation and Transformer Sizing
- Circuit Maintenance

See the footnotes in this section of the model for further detail.

Miscellaneous Meter Reads savings section

Utilities often have “special reads” performed by non-meter reading personnel. This is due to a variety of reasons including complaints, etc. This section captures the cost associated with this activity and assumes that these miscellaneous reads are being performed outside of the meter reading organization, therefore they were not counted elsewhere in the meter reading budget.

The value is derived from the estimated costs per miscellaneous read, the number of reads and growth assumptions for the number of reads.

See the footnotes in this section of the model for further detail.

REVENUE ENHANCEMENT WORKSHEET

The Revenue Enhancement worksheet is intended to capture additional revenue items associated with AMI.

Several example value drivers for Gas and Electric are shown including:

- Improved theft detection and recovery
- Increased meter reading accuracy
- Unregistered meters

An example method of computing several of these is included at the bottom of the worksheet. See the footnotes in this section of the model for further detail.

AVOIDED CAPITAL WORKSHEET

This worksheet aggregates the avoided capital components of several worksheets. These include capital savings from several worksheets, including:

- Customer Service
- Distribution Operations (Both Electric and Gas)

See the footnotes in this section of the model for further detail.

METER READING BUDGET WORKSHEET

Overview

Many utilities may represent their meter reading benefits as a function of a “cost per read”. For increased accuracy, this worksheet is intended to build up an example budget for the pre-AMI meter reading organization to more fully identify those savings which can be realized from the meter reading organization.

The budget is organized as follows:

- Labor Expenses
 - Straight time
 - Over time
- Benefits loading
- Capital expenses
- Other expenses

Although a budgetary build-up is preferred to fully understand the value opportunity, an alternative line has been added at the bottom of the budget section which allows direct entry of the savings opportunity for the Data Collection group. This will over-ride the calculated budget worksheet value and is provided to enable a quick estimation without re-creating a budget. See the footnotes in this section of the model for further detail.

Budget Assumptions Section

This section is used for key budgetary inputs, including number of employees and salaries for personnel expenses and total costs for non-personnel expenses.

See the footnotes in this section of the model for further detail.

Conclusion

This user guide and the associated financial model has shown an illustrative example for how a utility or public utility commission (PUC) may conduct a preliminary value assessment for the installation of an Advanced Meter Infrastructure system. Individual users should adapt their own approach to fit the unique organizational, operational, and financial considerations of their own situation.

The associated model may be updated occasionally based on industry changes or user feedback. Please ensure that you are using the most recent version by visiting "www.energydelivery.mckinsey.com" and then select the "Advanced Metering Infrastructure (AMI)" link. In addition, if you have feedback or suggested changes, they can be submitted on this same website.

Model Version History

Model Version 1.00 (Initial public release)

Model file name: *AMI_Example_Model_v1.00.xls*

Release date: August 7, 2006

User guide file name: *AMI_Model_User_Guide_v1.00*

Release notes:

- This is the first publicly available model
- Includes basic project financial measures with support for Electric, Gas or Electric & Gas combined utilities for a broad variety of AMI technologies

Model Version 0.51 (Pre-release test version)

File name: *AMI Cost Benefits Evaluation Sample Model v0.51.xls*

Release date: June 7, 2006

User guide file name: *User_Guide_v0.51*

Release notes:

- Limited distribution version for feedback and testing only prior to public release