

# **Commonwealth Edison Company's Infrastructure Investment Plan**

**Attachment 2: 2012 Investment Plan**

**January 6, 2012**

## Table of Contents

|   |           |
|---|-----------|
| <b>Plan Overview .....</b>  | <b>4</b>  |
| Summary 2012 Plan Scope.....  | 5         |
| Summary 2012 Plan Schedule.....   | 8         |
| Summary 2012 Plan Budget.....   | 9         |
| Summary 2012 Program Staffing.....  | 10        |
| Summary 2012 Plan Quantity of Units.....  | 10        |
| <b>SECTION I.A: Underground Residential Cable (“URD”) Injection and Replacement .....</b> | <b>12</b> |
| I.A.1: 2012 Program Scope .....   | 12        |
| URD Cable Injection.....  | 13        |
| URD Cable Replacement .....   | 13        |
| I.A.2: 2012 Program Schedule .....  | 13        |
| I.A.3: 2012 Program Budget.....   | 15        |
| I.A.4: 2012 Program FTEs .....  | 16        |
| I.A.5: 2012 Program Units .....   | 17        |
| <b>SECTION I.B: Mainline Cable System Refurbishment and Replacement.....</b>              | <b>19</b> |
| I.B.1: 2012 Program Scope.....  | 19        |
| Manhole Assessment and Cable System Refurbishment .....                                   | 20        |
| Cable Replacement.....  | 20        |
| Cable testing.....  | 21        |
| I.B.2: 2012 Program Schedule.....   | 21        |
| I.B.3: 2012 Program Budget.....   | 26        |
| I.B.4: 2012 Program FTEs.....   | 27        |
| I.B.5: Program Units.....   | 28        |
| Manhole Assessment and Cable System Refurbishment .....                                   | 28        |
| Cable Replacement.....  | 29        |
| Cable Testing .....   | 30        |
| <b>SECTION I.C: Ridgeland 69kV Cable Replacement .....</b>                                | <b>31</b> |
| I.C.1: 2012 Program Scope.....  | 31        |
| I.C.2: 2012 Program Schedule.....   | 31        |
| I.C.3: 2012 Program Budget.....   | 33        |
| I.C.4: 2012 Program FTEs.....   | 34        |
| <b>SECTION I.D: Construction of Training Facilities .....</b>                             | <b>35</b> |
| I.D.1: 2012 Program Scope .....   | 35        |
| Chicago Facility .....  | 35        |
| Rockford Facility.....  | 36        |
| I.D.2: 2012 Program Schedule .....  | 37        |
| I.D.3: 2012 Program Budget.....   | 38        |
| I.D.4: 2012 Program FTEs .....  | 40        |
| <b>SECTION I.E: Wood Pole Inspection, Treatment and Replacement .....</b>                 | <b>41</b> |
| I.E.1: 2012 Program Scope.....  | 41        |
| I.E.2: 2012 Program Schedule.....   | 41        |
| I.E.3: 2012 Program Budget.....   | 43        |

|   |           |
|---|-----------|
| I.E.4: 2012 Program FTEs.....   | 44        |
| I.E.5: Program Units.....   | 45        |
| Wood Pole Inspection .....  | 45        |
| Wood Pole Replacement/ Reinforcement .....                                    | 46        |
| <b>SECTION I.F: Storm Hardening .....</b>                                     | <b>47</b> |
| I.F.1: 2012 Program Scope .....   | 47        |
| I.F.2: 2012 Program Schedule .....  | 48        |
| I.F.3: 2012 Program Budget .....  | 50        |
| I.F.4: 2012 Program FTEs .....  | 51        |
| <b>SECTION II.A: Distribution Automation.....</b>                             | <b>52</b> |
| II.A.1: 2012 Program Scope .....  | 52        |
| II.A.2: 2012 Program Schedule .....   | 53        |
| II.A.3: 2012 Program Budget .....   | 55        |
| II.A.4: 2012 Program FTEs .....   | 56        |
| II.A.5: 2012 Program Units .....  | 57        |
| <b>SECTION II.B: Substation Micro-Processor Relay Upgrades .....</b>          | <b>58</b> |
| II.B.1: 2012 Program Scope .....  | 58        |
| II.B.2: 2012 Program Schedule .....   | 58        |
| II.B.3: 2012 Program Budget .....   | 60        |
| II.B.4: 2012 Program FTEs .....   | 61        |
| <b>SECTION II.C: Smart Meters.....</b>  | <b>62</b> |
| <b>SECTION II.D. Associated Cyber Secure Data Communications Network.....</b> | <b>62</b> |
| <b>Appendix A: Summary-Level Plan Information.....</b>                        | <b>64</b> |

## Executive Summary

### Plan Overview

On November 8, 2011, Commonwealth Edison Company ("ComEd") filed its proposed performance-based formula rate, Rate DSPP – Delivery Service Pricing and Performance ("Rate DSPP"), with the Illinois Commerce Commission ("Commission") in pursuant to Section 16-108.5 of the Public Utilities Act ("Act"). The Commission commenced Docket No. 11-0721 to review that filing. In making that filing, ComEd confirmed that it elected to become a "participating utility", and committed to undertake the investments described in Section 16-108.5(b) of the Act. Section 16-108.5(b) also calls on ComEd, within 60 days of such filing, to submit a plan for satisfying its infrastructure investment program commitments pursuant to subsection (b), which must include a schedule and staffing plan for the next calendar year.

Accordingly, ComEd submits to the Commission together with its 10-year Infrastructure Investment Plan ("Plan") this 2012 Investment Plan ("2012 Plan"), for informational purposes, as prescribed by the Act. As also prescribed, the 2012 Plan organizes individual projects under two broad categories of investment:

*Reliability-Related Investments:* Section I of the 2012 Plan sets forth electric system upgrades, modernization projects, and training facilities; and

*Smart Grid-Related Investments:* Section II of the 2012 Plan describes the Smart Grid electric system upgrades and transmission and distribution infrastructure upgrades and modernization.

The 2012 Plan includes an estimated cumulative total of \$139 million of capital investment and associated expense in electric system upgrades, modernization projects, and training facilities ("Reliability-Related Investments"). The 2012 Plan also includes an estimated cumulative total of \$94 million of capital investment and associated expense in Smart Grid-Related Investments.

In the event that Section 16-108.5 becomes inoperative or Rate DSPP is terminated, then this 2012 Plan and the multi-year Plan, including but not limited to all programs and investments, will also become inoperative and terminate immediately.

### **Summary 2012 Plan Scope**

The 2012 Plan provides information on scope, schedule, budget, staffing, and units of work that are planned to be completed in 2012 in association with ComEd's Plan.

***Reliability-Related Investments.*** These programs are described in detail in Section I of the 2012 Plan, and include, but are not limited to, the following specific programs briefly described below:

- **Underground Residential Cable ("URD") injection and replacement.** This program is designed to remediate an estimated 461 miles of bare concentric cable in 2012, some of which was installed as early as 1966. This work will reduce long duration outages primarily experienced in residential subdivisions.
- **Mainline cable system refurbishment and replacement.** The most complex of all the Reliability-Related investments, this program includes planned assessment and refurbishment of an estimated 4,420 manholes, replacement of an estimated 44

miles of mainline underground cable, and testing of an estimated 117 sections of mainline cable over the course of 2012. This program is primarily targeted at the testing and replacement of lead cable in urban areas.

Because remediation scope is based on inspection results, the complex nature of the underground system, interrelationship of multiple circuits within a manhole, and certain potential moratoriums on work, this program also contains the highest degree of scope uncertainty of all the Reliability-Related investments.

- **Ridgeland 69kV cable replacement.** This program involves planned replacement of an estimated 3.2 miles of high voltage (69kV) underground cable in 2012, a majority of which was installed in the early 1950's, and some as early as 1927.
- **Construction of training facilities.** This program provides for planned construction of two new facilities – one in Chicago and one in Rockford – to provide electric and customer operations training. These facilities will provide the ability to offer year-round practical, hands-on training to ComEd's field employees and will enable them to practice classroom theory on real equipment and technology year-round.
- **Wood pole inspection, treatment, and replacement.** There are approximately 1.3 million wood poles on the ComEd system. This program entails planned inspection, and treatment of an estimated 133,400 wood poles, and replacement or reinforcement of an estimated 2,500 additional poles over the course of 2012. This program will reduce customer interruptions due to wood pole failures by programmatically assessing the strength and integrity of ComEd's wood poles.

- **Storm hardening.** This program is designed to further reduce the susceptibility of circuits to storm-related damage, and will include deployment of a variety of engineered solutions including, but not limited to, overhead-to-underground conversion, installation of tree-resistant conductors, and additional vegetation management. In order to optimize customer benefits, circuits will be prioritized based on historical susceptibility to storm-related damage. Engineered solutions will be designed specifically for each circuit.

More detailed descriptions for each of these, including scope, schedule, capital budget, staffing and units of work are included in Section I of this document.

**Smart Grid Electric System Upgrades.** These programs are described in detail in Section II of the 2012 Plan, and include, but are not limited to, the following specific programs briefly described below:

- **Distribution Automation (“DA”).** DA technology uses “sectionalizing” devices and remote communications to detect issues on the distribution system and automatically re-route power to minimize the number of customers impacted. This is commonly referred to as the self-healing nature of the Smart Grid. ComEd’s DA program includes installation of an estimated 470 DA devices over the course of 2012.
- **Substation micro-processor relay upgrades.** This program is designed to modernize one ComEd substation in 2012, including upgrade of electro-mechanical protective relays to modern microprocessor-based devices, replacement of aging circuit breakers, two-way communications between ComEd’s control center and each substation, and installation of technology to remotely monitor the health of

ComEd's largest assets, its transformers. This program provides for fault detection, remote asset monitoring and improved site security. Partial upgrades may be applied across the service territory. ComEd has over 250 transmission-fed substations, and over 800 substations in total.

- **Smart Meters.** This program involves the planned replacement of all retail meters on the ComEd distribution system with Smart Meters, including deployment of an Advanced Metering Infrastructure ("AMI"), which provides a two-way communications infrastructure to support other customer services and Smart Grid applications. Expected benefits include reductions in the number of estimated bills, unaccounted for energy, and consumption on inactive meters. Deployment of Smart Meters will occur pursuant to the Advanced Metering Infrastructure Deployment Plan ("AMI Plan") to be filed with the Commission no later than April 23, 2012, which must be approved within 60 days after filing. Prior to ComEd's filing, ComEd will review its proposed AMI Plan with the Smart Grid Advisory Council. Although the AMI Plan is currently under development, in general, ComEd expects at this time that Smart Meter installs will begin in the 3rd quarter of 2012, ending in 2021.

### **Summary 2012 Plan Schedule**

In order to establish a framework to plan for and schedule future work while efficiently addressing this inherent change and uncertainty, ComEd is employing a proven iterative planning structure. Under this structure, work plans will be developed on a rolling basis for each quarter of the investment period. Each work plan will outline a series of tasks comprising: project and work planning, design, regulatory and public affairs functions where required (e.g., permitting), project implementation, and review.

This periodic quarterly cycle is illustrated throughout this 2012 Plan in a series of Gantt charts showing repeating cycles of work planning and management activity. Please note that while this work planning and management cycle repeats on a quarterly basis, the activities associated with each quarter's iteration may take longer than a quarter to complete. This structure allows ComEd to implement its multi-year Plan effectively and rigorously, while retaining the required flexibility.

The individual program schedules included in this 2012 Plan explain when each program is planned to start and end. Most include both a rolling quarterly work plan process and a high-level task list. The Gantt charts that appear in the 2012 Plan are illustrative and are not intended to establish specific milestones. It is recognized that scope priorities will be adjusted over the course of the programs as new information is obtained. Note that 2012 is considered a ramp-up year for a majority of the programs. Figure A.1 in Appendix A presents a high level schedule to complete the entire scope of work associated with the 2012 Plan. Detailed 2012 planned schedules for specific program areas are provided in the sections that follow.

### **Summary 2012 Plan Budget**

The program budget identifies the planned monthly capital cost for each program. The 2012 Plan budget total is estimated to be \$233 million in incremental capital investments plus associated expenses. Table A.1 in Appendix A presents a summary of the 2012 Plan's estimated total capital budget by program, and Figure A.2 in Appendix A presents the estimated total capital budget by month associated with the 2012 Plan. Note that the costs by month shown in Figure A.2 exclude costs for the Smart Meter Program, which will be included in ComEd's AMI Plan.

## **Summary 2012 Program Staffing**

The program staffing identifies the 2012 full-time equivalents (“FTEs”) required for completion of program scope of work. FTEs have been calculated by taking the estimated worker-hours to execute the 2012 Plan and dividing by 2,080. Estimated worker-hours are composed primarily of:

1. Worker-hours charged directly to work orders associated with specific scopes of work; and
2. Worker-hours charged on timesheets in support of the 2012 Plan.

Worker-hours charged on timesheets in support of the 2012 Plan have been allocated to the specific scopes of work proportionally, based on the estimated worker-hours charged to work orders for specific scopes of work. The estimated FTEs shown in the 2012 Plan include direct and contractor FTEs as defined in Appendix A of ComEd's Plan. However, they do not include any induced FTEs.

Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, legal support and craft. Figure A.3 in Appendix A presents the estimated FTEs to execute the scheduled scope of work associated with the 2012 Plan. FTEs are not defined as employee head counts, and should not be confused with employment levels and trends.

## **Summary 2012 Plan Quantity of Units**

The program quantity of units describes the estimated number of work units, where applicable, that are planned to be completed in 2012 for each program area. Units of work for each program are discussed, as applicable, in that program's

respective section of the Plan. All units of work associated with the identified work scopes are included in the estimated quantities in this document, and will be counted towards achievement of the 2012 Plan goals. However, this does not limit additional units from being performed as part of the baseline spend at ComEd's discretion. The monthly targets listed are not intended to be firm milestones, but rather to provide directional guidance towards accomplishment of the annual goals.

## **SECTION I: Reliability-Related Investments**

### **SECTION I.A: Underground Residential Cable (“URD”) Injection and Replacement**

#### **I.A.1: 2012 Program Scope**

ComEd's URD system has approximately 8,700 miles of bare concentric neutral URD cable on its system that was installed between 1966 and 1985, which is primarily used to serve residential and commercial areas. The URD Injection and Replacement program excludes mainline direct buried cable, which is covered under the Mainline Cable System Refurbishment and Replacement program described in Section I.B below. URD cable failures mainly occur within the population of bare concentric neutral URD cable. As this cable ages, the number of annual failures in this type of cable has been trending up in recent years as this cable continues to age. Approximately 2,000 to 2,500 miles of this cable have already been addressed. ComEd anticipates that it will be necessary to inject or replace approximately 4,177 additional miles of the problematic cable over the course of the program. ComEd anticipates that, by the end of the program, the number of annual failures in this type of cable will be significantly reduced. This reduction in faults will reduce long-duration outages primarily experienced in residential subdivisions. The program consists of two major components:

- URD Cable Injection
- URD Cable Replacement

Each of these components is described in more detail below.

### URD Cable Injection

Cable injection fills in cable insulation voids and avoids cable failures. In general, URD cables that are candidates for injection typically have intact concentric neutral conductors, are not solid cable or strand-filled cable, and have a low number of cable splices. Where it is practical, cable injection is typically a more cost beneficial way to avoid URD cable failures than cable replacement. Based on ComEd's past experience with URD cable injection, it is expected that during 2012 an estimated 97 miles of URD cable will be injected.

### URD Cable Replacement

URD cables that cannot practically or economically be injected will be replaced on a schedule prioritized to replace worst performing URD cables first. It is expected that during 2012 an estimated 364 miles of URD cable will be replaced.

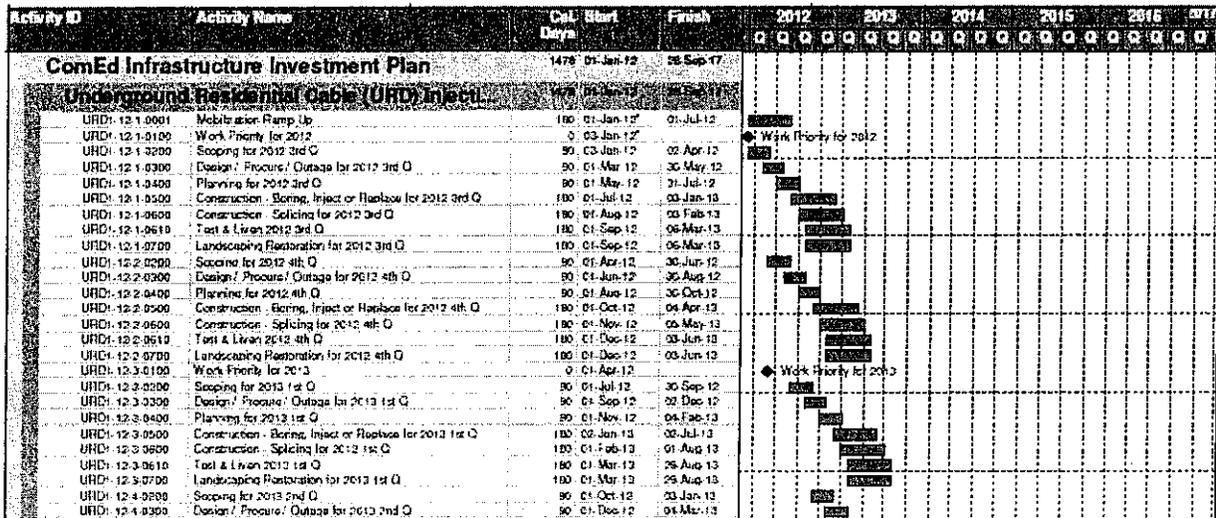
## **I.A.2: 2012 Program Schedule**

Figure I.A.2 presents the planned 2012 schedule to complete the URD Injection and Replacement program. Estimates of cost, units of work, and schedules for that work, may evolve over time. The schedule consists of summary level tasks for the scope of work associated with the 2012 Plan, including the following key tasks:

- Mobilization and ramp-up
- Establish priority for the calendar year
- Perform scoping

- Perform design tasks, procure material, and identify required outages in schedule
- Planning (develop work packages and secure permits)
- Construction – Boring, injection or replacement
- Construction – Splicing where required
- Test and liven
- Landscaping restoration

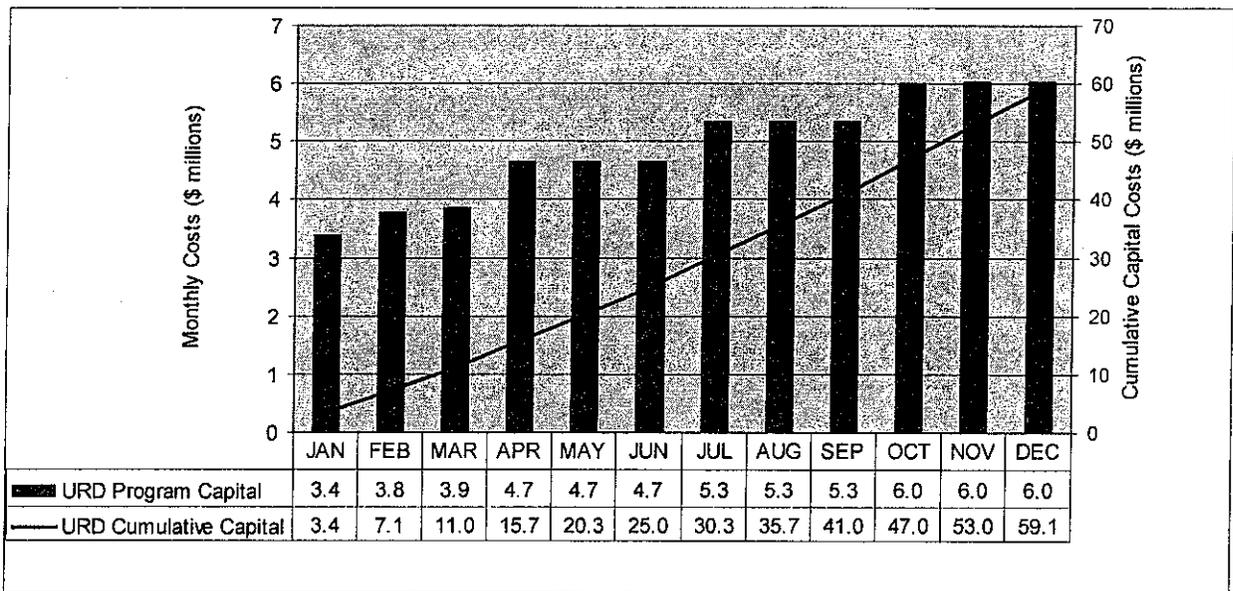
**FIGURE I.A.2: URD INJECTION AND REPLACEMENT 2012 SCHEDULE**



### I.A.3: 2012 Program Budget

Figure I.A.3 represents the estimated 2012 capital budget for the URD Injection and Replacement program. ComEd estimates the 2012 program cost to be capital investments of \$59 million plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

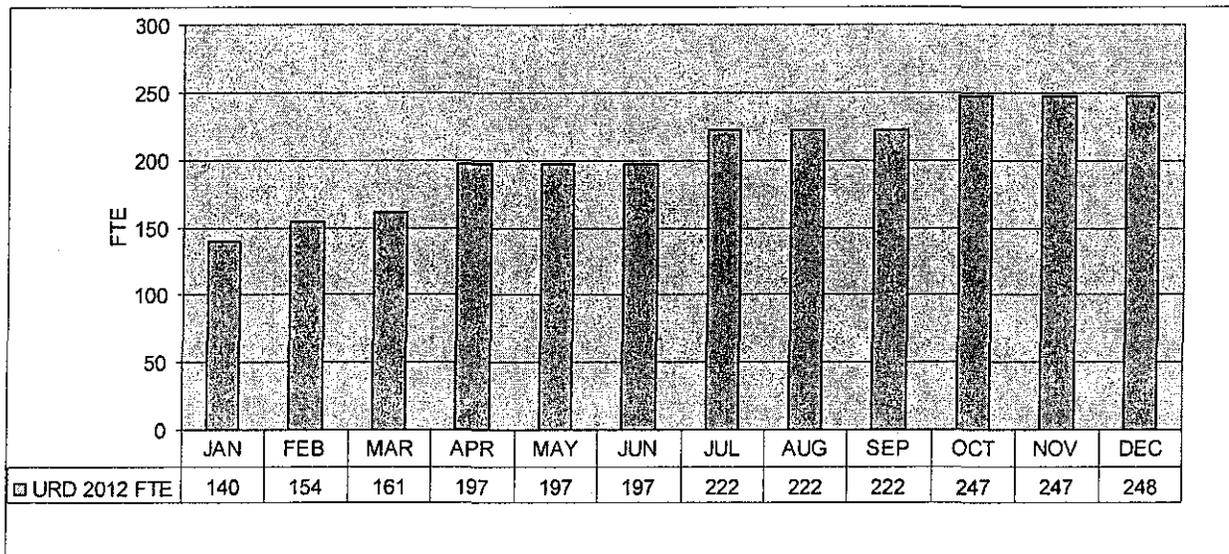
**FIGURE I.A.3: URD INJECTION AND REPLACEMENT 2012 CAPITAL BUDGET**



### I.A.4: 2012 Program FTEs

Figure I.A.4 presents the estimated FTEs required to perform the scheduled 2012 scope of work. FTEs have been calculated by taking the estimated worker-hours to execute the scope of work and dividing by 2,080. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, legal support and craft.

**FIGURE I.A.4: URD INJECTION AND REPLACEMENT 2012 FTES**



### I.A.5: 2012 Program Units

Figure I.A.5.A shows the miles of URD cable estimated to be injected in 2012. This chart will serve as a tracking mechanism over the course of 2012, and reflects the scope of work planned to be accomplished, as well as the scope of work left to be performed. It is estimated that approximately 97 miles will be injected in 2012. Estimates of cost, units of work, and schedules for that work may evolve over time.

**FIGURE 1.A.5.A: URD CABLE INJECTION 2012 UNITS**

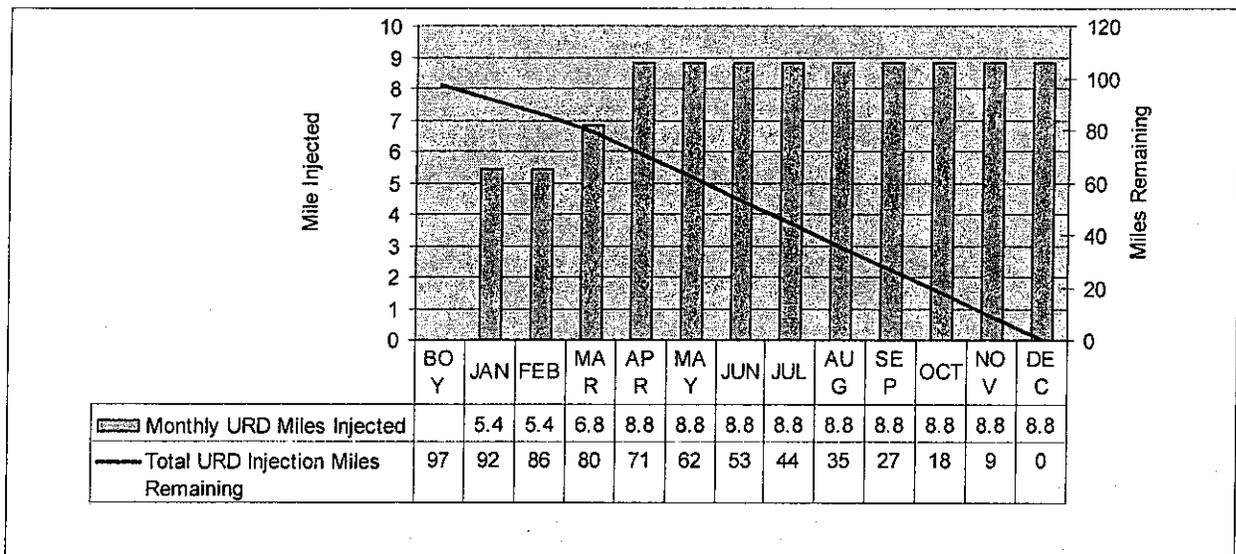
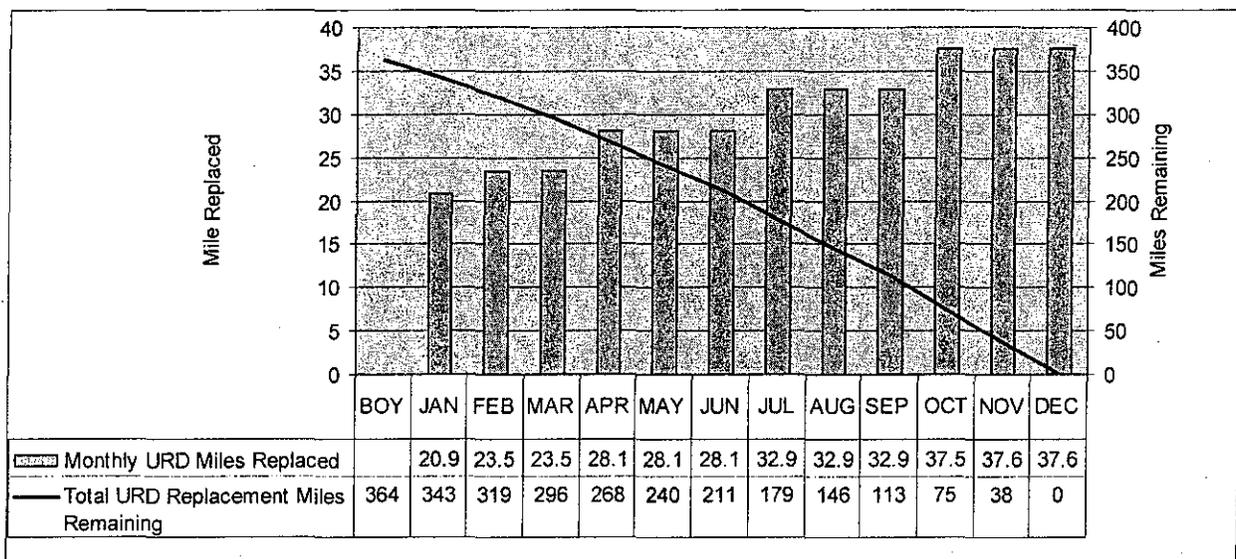


Figure I.A.5.B shows the miles of URD cable estimated to be replaced in 2012. This chart will serve as a tracking mechanism over the course of 2012, and reflects the scope of work planned to be accomplished, as well as the scope of work left to be performed. It is estimated that approximately 364 miles will be replaced over the course of the program. Estimates of cost, units of work, and schedules for that work may evolve over time.

**FIGURE I.A.5.B: URD CABLE REPLACEMENT 2012 UNITS**



## **SECTION I.B: Mainline Cable System Refurbishment and Replacement**

### **I.B.1: 2012 Program Scope**

The ComEd mainline underground system includes approximately 8,300 miles of cable installed in conduit systems or direct buried. Mainline cable system refurbishment and replacement has the most complex scope of work of all the programs. The scope is composed of three main work categories:

- Manhole assessment and cable system refurbishment
- Cable replacement
- Cable testing

The accomplishment of this scope is highly dependent on the ability to obtain necessary permits and to schedule equipment outages. Certain periods of time or certain work restrictions, such as summer critical periods, may limit the types of work that can be performed due to the need to maintain system configuration. Such periods will be reflected in ComEd's annual or summer critical work plans. Because remediation scope is based on inspection results, the complex nature of the underground system, interrelationship of multiple circuits within a manhole, and certain potential moratoriums on work, this program contains the highest degree of scope uncertainty of all the Reliability-Related investments.

### Manhole Assessment and Cable System Refurbishment

ComEd has approximately 28,300 manholes on its system. Over the course of 2012 ComEd plans to assess an estimated 4,420 manholes and perform refurbishment within the parameters of the Act.

Assessment includes the evaluation of the overall condition of the manhole, cables, and cable support systems. Refurbishment includes replacing or repairing cable systems in the manhole, and addressing other structural issues as required. Manhole structural work may range from minor refurbishment to replacement of an entire manhole.

Concurrent with manhole assessments, cable joint issues discovered within the manholes (e.g., bulging or leaking joints) will be addressed primarily with cable replacement. As assessments are performed, work plans will be generated to address the findings.

### Cable Replacement

Replacement criteria will be based, in part, on the method of original installation. Replacement of cable in conduit will be based on manhole assessment findings. Direct buried mainline cable will either be replaced without testing, or replaced after testing, based on cable length and prior fault history. It is estimated that approximately 44 miles of mainline cable will be replaced in 2012. This estimate is based on assumptions concerning inspection results, which will be adjusted over time as actual data becomes available. Because of their inherent reliance on assumptions, early estimates of cable

replacement contain a high degree of uncertainty and are not intended to reflect firm scope.

### Cable Testing

Underground cable is divided into sections largely as a result of limits placed on cable lengths by the manufacturers and limits due to the physical configuration of the circuits.

An estimated 117 circuit sections will be selected in 2012 for Very Low Frequency (“VLF”) Testing per the Institute of Electric and Electronics Engineers (“IEEE”) standard 400.2 to validate the serviceability of the section of cable, including circuit sections that either have not had a prior test, or circuit sections that have had multiple faults within the last 36 months, but are not candidates for replacement without testing. It is estimated that cable tests will result in replacement of cable sections, which are included in the estimate shown in the “Cable Replacement” section above. This estimate is based on assumptions concerning inspection results, which will be adjusted over time as actual data becomes available. Because of their inherent reliance on assumptions, early estimates of cable testing contain a high degree of uncertainty and are not intended to reflect firm scope.

### **I.B.2: 2012 Program Schedule**

Figure I.B.2.A presents the estimated 2012 schedule to complete the Manhole Assessment and Cable System Refurbishment program. Estimates of cost, units of work, and schedules for that work, may evolve over time. The schedule consists of high

level tasks for the scope of work associated with the 2012 Plan, including the following key tasks:

- Mobilization and ramp up
- Establish manhole inspection priority for the calendar year
- Perform scoping and configuration analysis; review sequence for capacity issues
- Perform design tasks, procure material, and identify required outages in schedule; include identified joint issues in evaluation
- Planning (develop work packages and secure permits)
- Construction – Manhole cleaning (environmental) if required
- Construction - Conduct manhole assessments and refurbish cable systems as necessary
- Evaluate results
- Develop cable replacement plans as necessary

Figure I.B.2.B presents the estimated 2012 schedule to complete the Mainline Cable Replacement program. The schedule consists of high level tasks for the scope of work associated with the 2012 Plan, including the following key tasks:

- Mobilization and ramp-up
- Establish replacement priority for the calendar year
- Perform scoping and configuration analysis; review sequence for capacity issues

- Perform design tasks, procure material, and identify required outages in schedule; include identified joint issues in evaluation
- Planning (develop work packages and secure permits)
- Construction – Install conduit when required
- Construction – Pull / install cable and terminal pole work
- Construction – Pull / install cable
- Construction – Install dead joints
- Test cable and liven

Figure I.B.2.C presents the estimated 2012 schedule to complete the Mainline Cable Testing program. The schedule consists of high level tasks for the scope of work associated with the 2012 Plan, including the following key tasks:

- Ramp-up period
- Establish testing priority for the calendar year
- Perform scoping and configuration analysis; review sequence for capacity issues
- Perform design tasks, procure material, and identify required outages in schedule; include identified joint issues in evaluation
- Planning (develop work packages and secure permits)
- Perform testing
- Evaluate results
- Develop work program for testing failures (*i.e.*, cable replacement) based on results



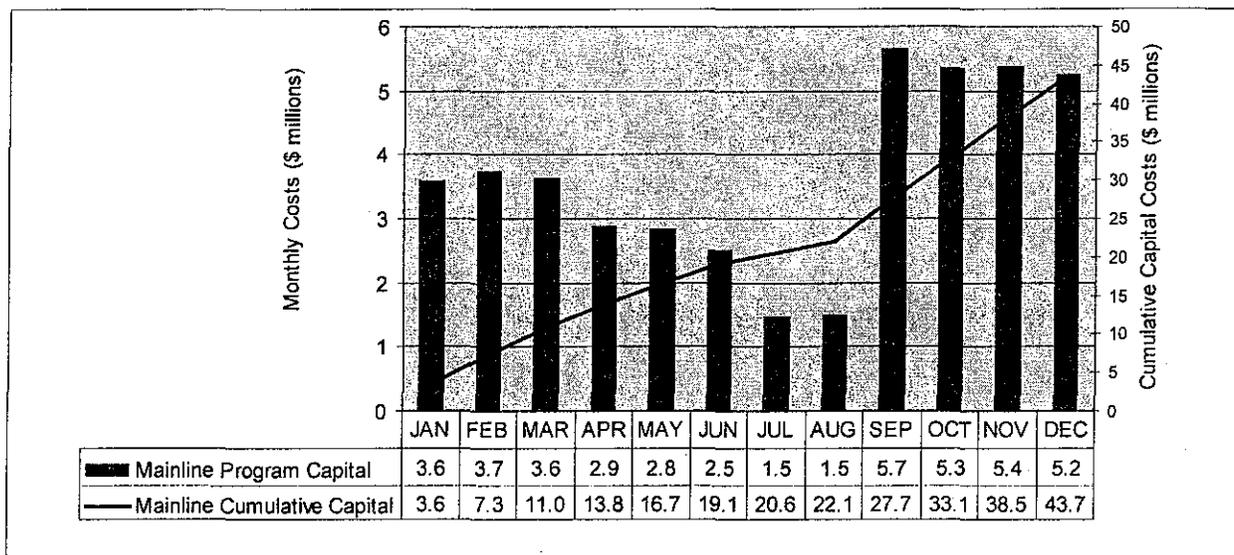
FIGURE 1.B.2.C: MAINLINE CABLE TESTING 2012 SCHEDULE

| Activity ID                                 | Activity Name  | Est. Days | Start     | Finish    | 2012 | 2013      | 2014      | 2015 | 2016 | 2017 |
|---|--|-----------|-----------|-----------|------|-----------|-----------|------|------|------|
| <b>ComEd Infrastructure Investment Plan</b> |  |           |           |           | 1362 | 01-Jan-12 | 01-May-17 |      |      |      |
| <b>Cable Testing</b>                        |  |           |           |           |      |           |           |      |      |      |
| MCI-12.1.0001                               | Mobilization Ramp Up                                       | 180       | 01-Jan-12 | 01-Jul-12 |      |           |           |      |      |      |
| MCI-12.1.0100                               | Work Priority 2012   | 0         | 01-Jan-12 |           |      |           |           |      |      |      |
| MCI-12.1.0150                               | Work Scope / Configuration Analysis / Review Capacity I... | 90        | 01-Jan-12 | 01-Apr-12 |      |           |           |      |      |      |
| MCI-12.1.0200                               | Design / Procure Material / Identify Required Outages in   | 90        | 01-Feb-12 | 30-Apr-12 |      |           |           |      |      |      |
| MCI-12.1.0250                               | Work Planning - 2012 2nd Q                                 | 90        | 01-Mar-12 | 30-May-12 |      |           |           |      |      |      |
| MCI-12.1.0300                               | Perform Testing - 2012 2nd Q                               | 60        | 01-Apr-12 | 31-May-12 |      |           |           |      |      |      |
| MCI-12.1.0400                               | Evaluate Results - 2012 2nd Q                              | 60        | 01-Apr-12 | 31-May-12 |      |           |           |      |      |      |
| MCI-12.2.0150                               | Work Scope / Configuration Analysis / Review Capacity I... | 90        | 01-Apr-12 | 30-Jun-12 |      |           |           |      |      |      |
| MCI-12.2.0200                               | Design / Procure Material / Identify Required Outages in   | 90        | 01-May-12 | 31-Jul-12 |      |           |           |      |      |      |
| MCI-12.2.0250                               | Work Planning - 2012 3rd Q                                 | 90        | 01-Jun-12 | 30-Aug-12 |      |           |           |      |      |      |
| MCI-12.2.0300                               | Perform Testing - 2012 3rd Q                               | 60        | 01-Jul-12 | 30-Aug-12 |      |           |           |      |      |      |
| MCI-12.2.0350                               | Evaluate Results - 2012 3rd Q                              | 60        | 01-Jul-12 | 30-Aug-12 |      |           |           |      |      |      |
| MCI-12.2.0400                               | Develop Work Program for Testing Failures - 2012 3rd Q     | 90        | 01-Aug-12 | 30-Oct-12 |      |           |           |      |      |      |
| MCI-12.3.0150                               | Work Scope / Configuration Analysis / Review Capacity I... | 90        | 01-Jul-12 | 30-Sep-12 |      |           |           |      |      |      |
| MCI-12.3.0200                               | Design / Procure Material / Identify Required Outages in   | 90        | 01-Aug-12 | 30-Oct-12 |      |           |           |      |      |      |
| MCI-12.3.0250                               | Work Planning - 2012 4th Q                                 | 90        | 01-Sep-12 | 30-Dec-12 |      |           |           |      |      |      |
| MCI-12.3.0300                               | Perform Testing - 2012 4th Q                               | 60        | 01-Oct-12 | 01-Dec-12 |      |           |           |      |      |      |
| MCI-12.3.0350                               | Evaluate Results - 2012 4th Q                              | 60        | 01-Oct-12 | 01-Dec-12 |      |           |           |      |      |      |
| MCI-12.3.0400                               | Develop Work Program for Testing Failures - 2012 4th Q     | 90        | 01-Nov-12 | 04-Feb-13 |      |           |           |      |      |      |
| MCI-12.4.0100                               | Work Priority 2013   | 0         | 01-Jul-12 |           |      |           |           |      |      |      |
| MCI-12.4.0150                               | Work Scope / Configuration Analysis / Review Capacity I... | 90        | 01-Oct-12 | 03-Jan-13 |      |           |           |      |      |      |
| MCI-12.4.0200                               | Design / Procure Material / Identify Required Outages in   | 90        | 01-Nov-12 | 04-Feb-13 |      |           |           |      |      |      |
| MCI-12.4.0250                               | Work Planning - 2013 1st Q                                 | 90        | 01-Dec-12 | 04-Mar-13 |      |           |           |      |      |      |

### I.B.3: 2012 Program Budget

Figure I.B.3 presents the estimated 2012 capital budget for the Mainline Cable System Refurbishment and Replacement program. ComEd estimates the 2012 program cost to be capital investments of \$44 million, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

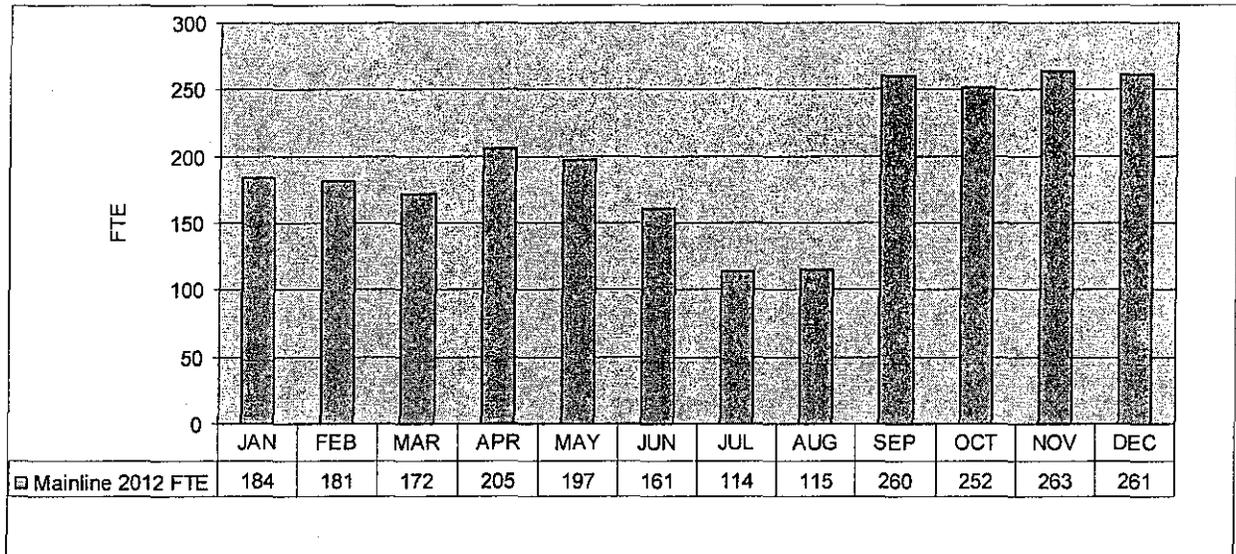
**FIGURE I.B.3: MAINLINE CABLE SYSTEM REFURBISHMENT AND REPLACEMENT 2012 CAPITAL BUDGET**



**I.B.4: 2012 Program FTEs**

Figure I.B.4 presents the estimated FTEs to perform the scheduled 2012 scope of work. FTEs have been calculated by taking the estimated worker-hours to execute the scope of work and dividing by 2,080. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, legal support and craft.

**FIGURE I.B.4: MAINLINE CABLE SYSTEM REFURBISHMENT AND REPLACEMENT 2012 FTES**

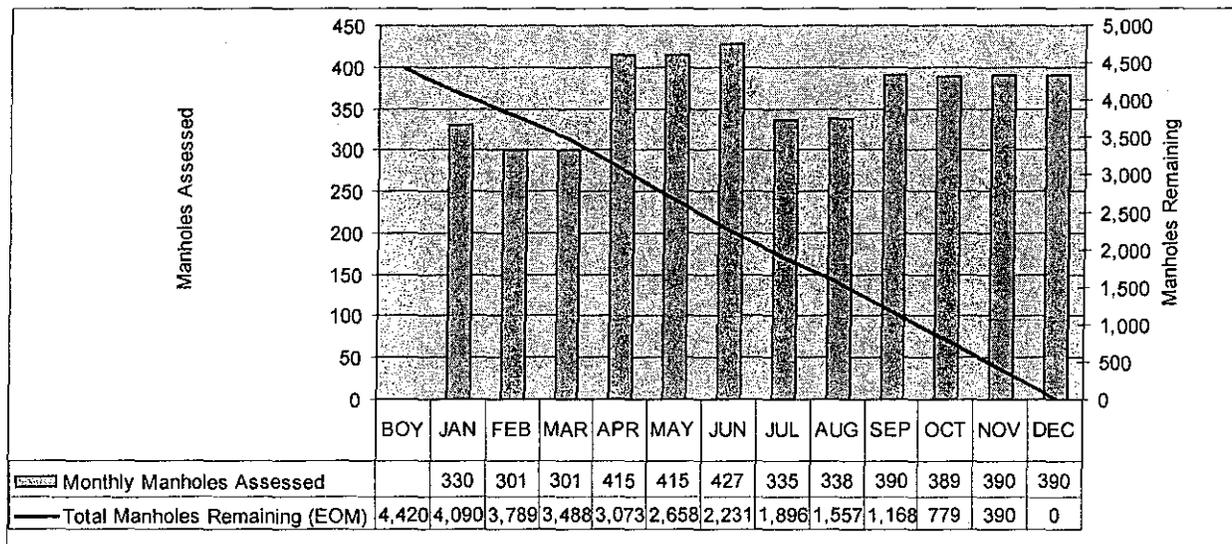


## I.B.5: Program Units

### Manhole Assessment and Cable System Refurbishment

Figure I.B.5.A shows the estimated number of manhole assessments to take place over the course of 2012 at 4,420. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time.

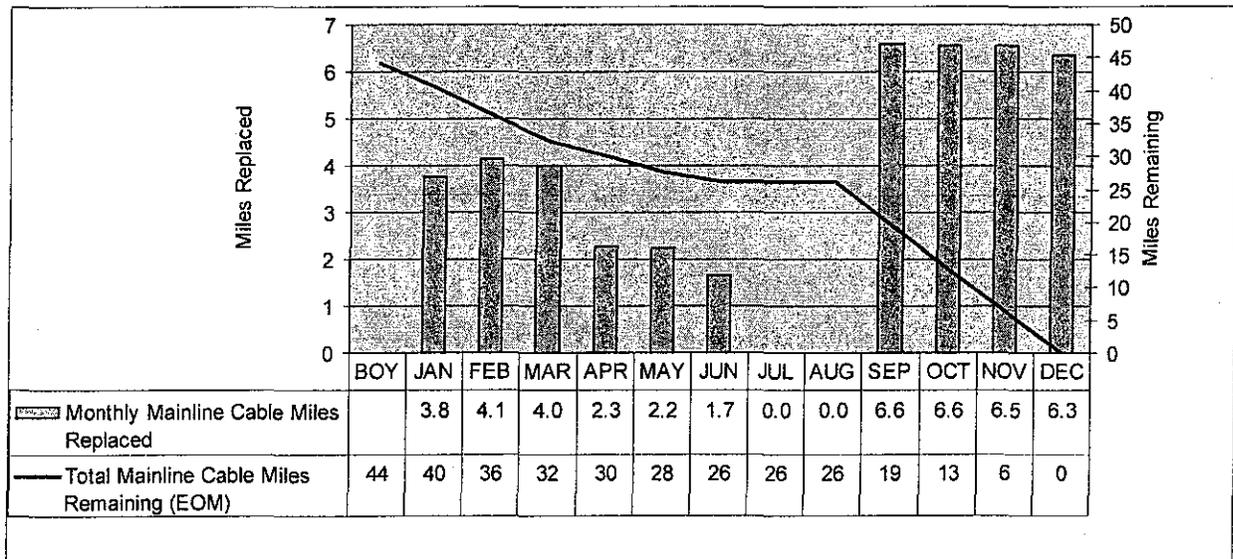
**FIGURE I.B.5.A: MANHOLE ASSESSMENT 2012 UNITS**



Cable Replacement

Figure I.B.5.B shows the estimated miles of Mainline cable to be replaced in 2012. It is expected that some cables will be replaced based on historical performance of the cable, without the need for prior VLF testing. This chart will serve as a tracking mechanism over the course of the year, and reflects the planned scope of work to be accomplished in 2012 as well as the scope of work left to be performed. The current estimate for replacement in 2012 is approximately 44 miles of mainline underground cable, which includes cables replaced and those that may fail VLF testing. Estimates of cost, units of work, and schedules for that work may evolve over time.

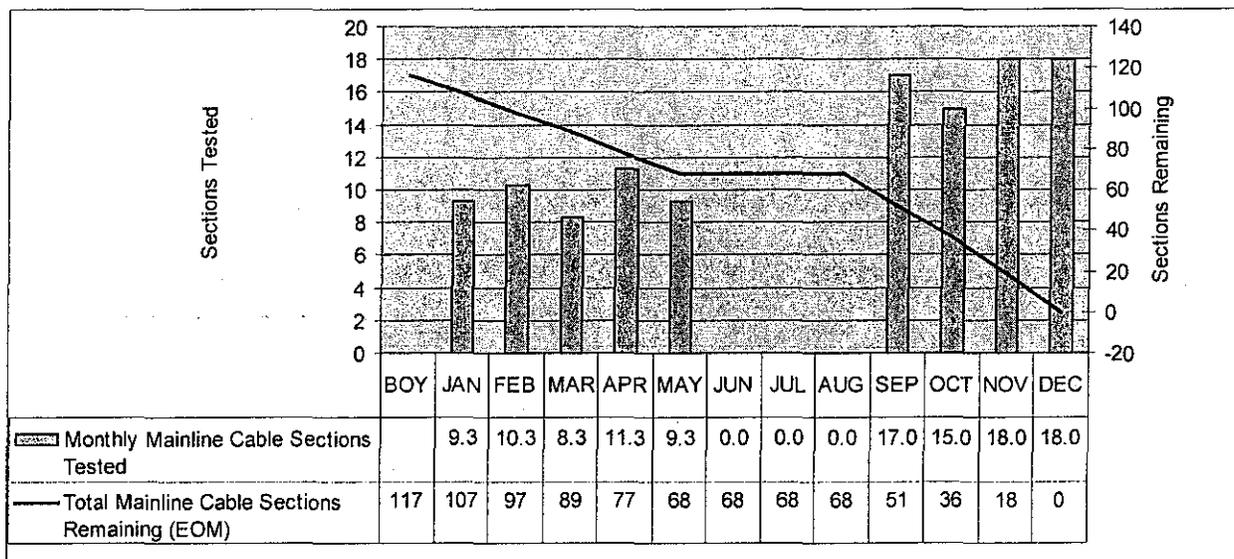
**FIGURE I.B.5.B: MAINLINE CABLE REPLACEMENT 2012 UNITS**



Cable Testing

Figure I.B.5.C shows the estimated number of sections of mainline cable to be VLF tested in 2012. This chart will serve as a tracking mechanism over the course of the year. This chart reflects the scope of work planned to be accomplished in 2012 as well as the scope of work left to be performed. It is estimated that approximately 117 sections of mainline cable will be VLF tested in 2012. Estimates of cost, units of work, and schedules for that work may evolve over time.

**FIGURE I.B.5.C: MAINLINE CABLE TESTING 2012 UNITS**



## **SECTION I.C: Ridgeland 69kV Cable Replacement**

### **I.C.1: 2012 Program Scope**

The Ridgeland 69kV cable system is approximately 40.5 circuit miles, composed of four cable subsystems: Solid Paper Lead ("PL"), Cross-Link Polyethylene ("XLPE"), Low Pressure Fluid Filled ("LPFF"), and High Pressure Fluid Filled ("HPFF").

The cable replacement program for the Ridgeland area began in 1998, targeting poor performing paper insulated lines. The majority of the paper insulated lines that are being replaced were installed in the early 1950's, although some were installed as early as 1927. Replacement of circuits with the reliable XLPE cable systems will increase the long term reliability in the area.

The focus of the 2012 program is to replace line L-19202Y Berwyn to Hawthorne, and line L-19204 Hawthorne to Cicero, representing approximately 3.2 circuit miles.

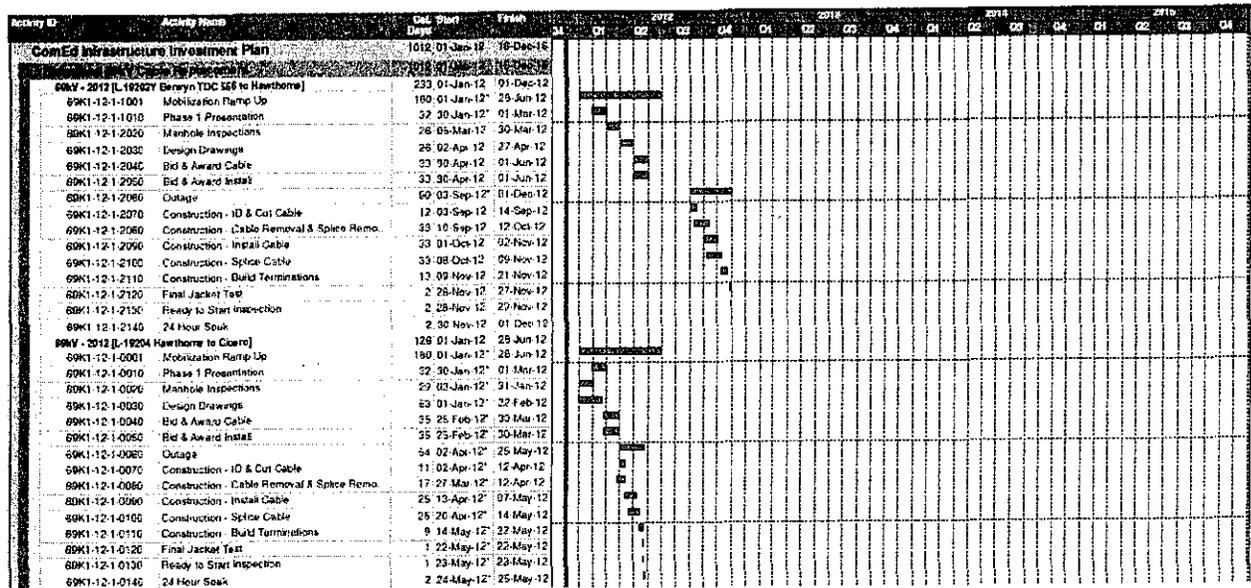
### **I.C.2: 2012 Program Schedule**

Figure I.C.2 presents the estimated schedule to complete the Ridgeland 69kV Cable Replacement 2012 scope of work. Estimates of cost, units of work, and schedules for that work may evolve over time. The schedule consists of high level tasks for the scope of work associated with the 2012 Plan, including the following key tasks:

- Ramp-up period
- Establish replacement priority for the calendar year
- Perform scoping and configuration analysis; review sequence for capacity issues

- Perform design tasks, procure material, and identify required outages in schedule; include identified joint issues in evaluation
- Planning (develop work packages and secure permits)
- Construction – Remove old cable
- Construction – Pull / install new cable and splice
- Cable commissioning (test cable and liven)

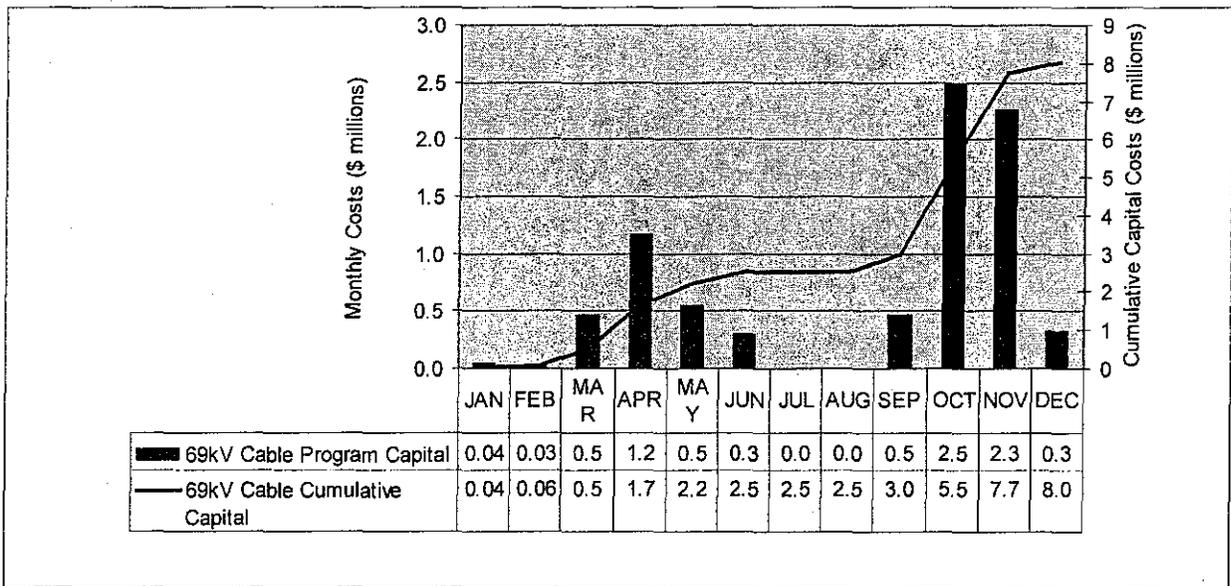
**FIGURE I.C.2: RIDGELAND 69kV CABLE REPLACEMENT 2012 SCHEDULE**



**I.C.3: 2012 Program Budget**

Figure I.C.3 presents the estimated 2012 capital budget for the Ridgeland 69kV Cable Replacement program. ComEd estimates the 2012 program cost to be capital investments of \$8 million, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

**FIGURE I.C.3: RIDGELAND 69kV REPLACEMENT CAPITAL BUDGET**



**I.C.4: 2012 Program FTEs**

Figure I.C.4 presents the estimated FTEs to perform the scheduled 2012 scope of work. FTEs have been calculated by taking the estimated worker-hours to execute the scope of work and dividing by 2,080. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, legal support and craft.

**FIGURE I.C.4: RIDGELAND 69kV CABLE REPLACEMENT 2012 FTES**

