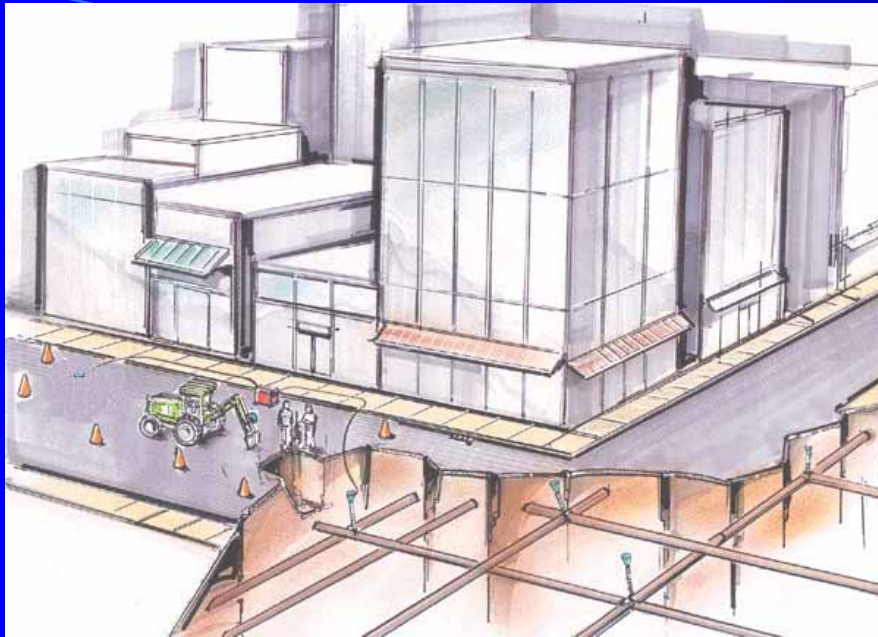


Role and Benefit of R&D



Con Edison's Experience

March 22, 2005

Role and Benefits of R&D

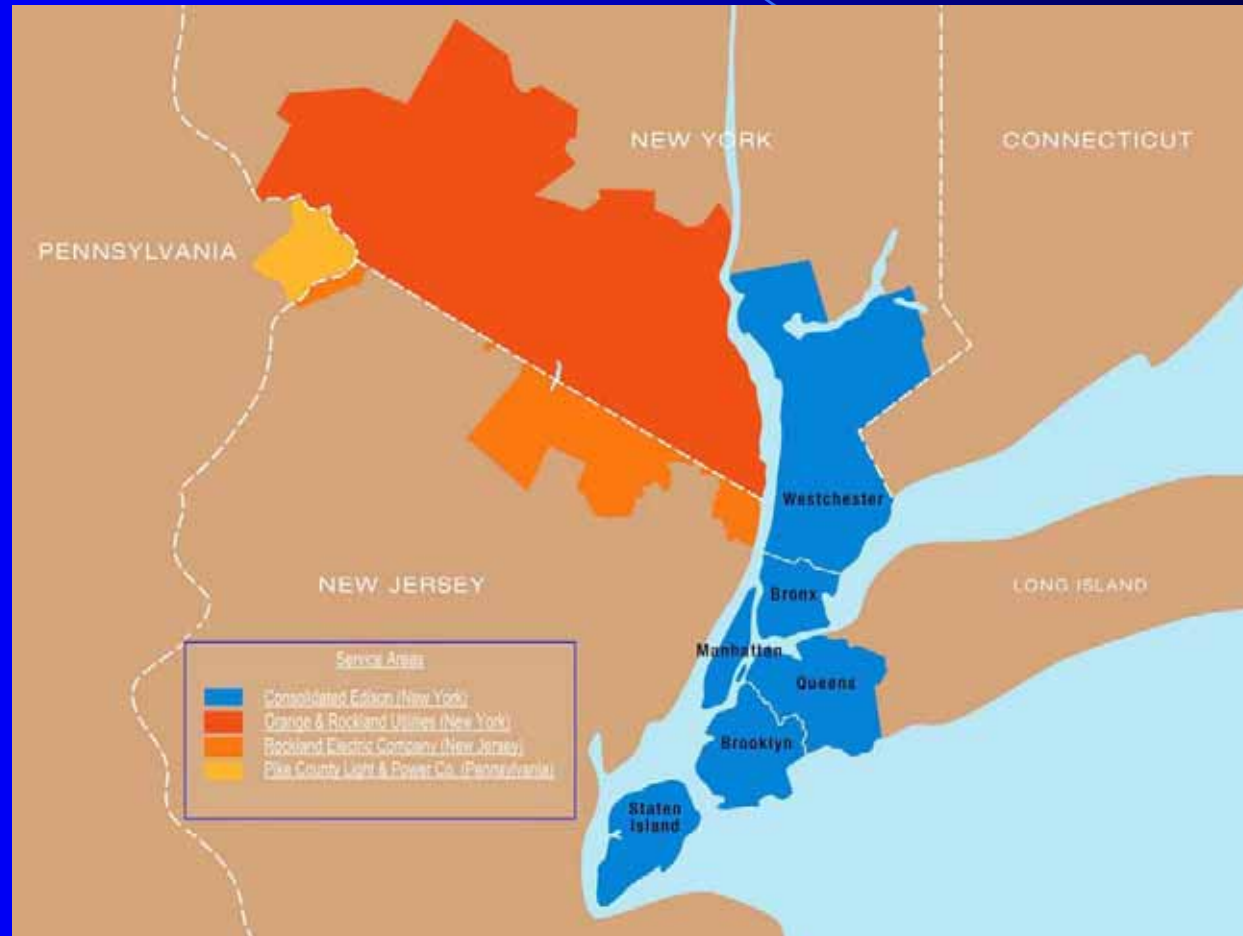
- Who/what is Con Edison?
- Why R&D?
- Role of utility/AGA
- Priority areas for collaborative R&D
- R&D success stories
- How to make it work

Role and Benefits of R&D

- **Who/what is Con Edison?**
- Why R&D?
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Role and Benefits of R&D

Who/what is Con Edison?



Role and Benefits of R&D

Who/what is Con Edison?

- Combo electric/gas/steam holding company
- Origin: gas utility since 1823
 - 3.0 million plus electric customers
 - 1.1 million gas customers
 - 2000 steam customers
- Mostly urban, high consequence area
- Equal parts of cast iron, steel, plastic

Role and Benefits of R&D

- Who/what is Con Edison?
- **Why R&D?**
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Role and Benefits of R&D

Why R&D?

- New solutions to real problems
- Reduce cost
- Improve safety and reliability
- Minimize customer downtime
- Meet new regulations



Role and Benefits of R&D

- Who/what is Con Edison?
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Role and Benefits of R&D

Role of utility and AGA

- Utility:
 - Clear problem definition
 - Creative ideas for solution
 - Site for testing
 - Buy-in for technology transfer
- AGA:
 - Industry-wide survey
 - Avenue for collaboration
 - Contacts with legislators



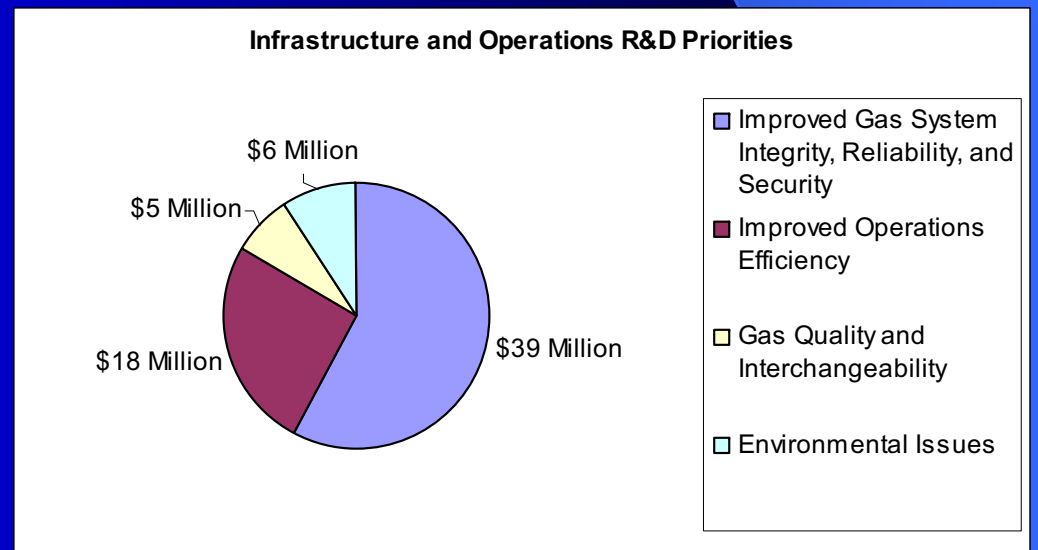
Role and Benefits of R&D

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Role and Benefits of R&D

Priority Areas for Collaboration

- Infrastructure and Operations:
 - System Integrity, Reliability and Security
 - Operations Efficiency
 - Gas Quality
 - Environmental Issues



Role and Benefits of R&D

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Role and Benefits of R&D

R&D Success Stories

- Large Diameter Coiled PE Pipe (Realized)
- Cured In Place Pipe Liners (Realized)
- CISBOT (Realized)
- Direct Assessment (Realized)
- Inspection of Unpiggable Transmission Mains (Projected)
- Remote Leak Detection (Projected)

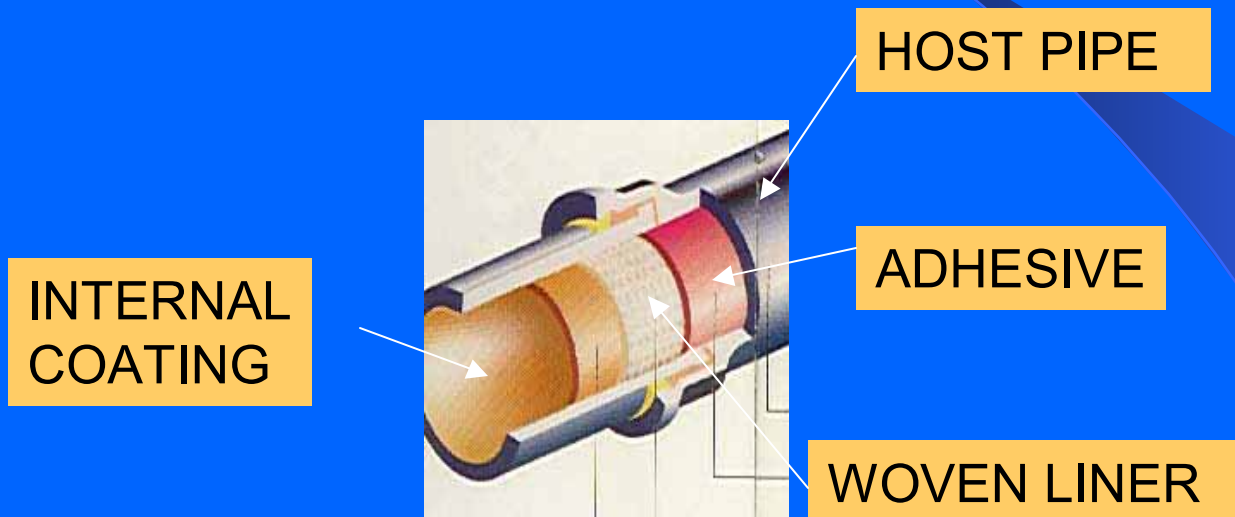
Large Diameter Coiled PE Pipe



Large Diameter Coiled PE Pipe Realized Benefits

- Reduced cost of installation
 - Reduces number of fusions to join pipe
 - Efficient process
- Savings of \$3/ft
- Industry has saved over \$15 million since '95
- 4" Technology also opened market for extended-length 2" coiled PE pipe

Cured-In-Place Liner



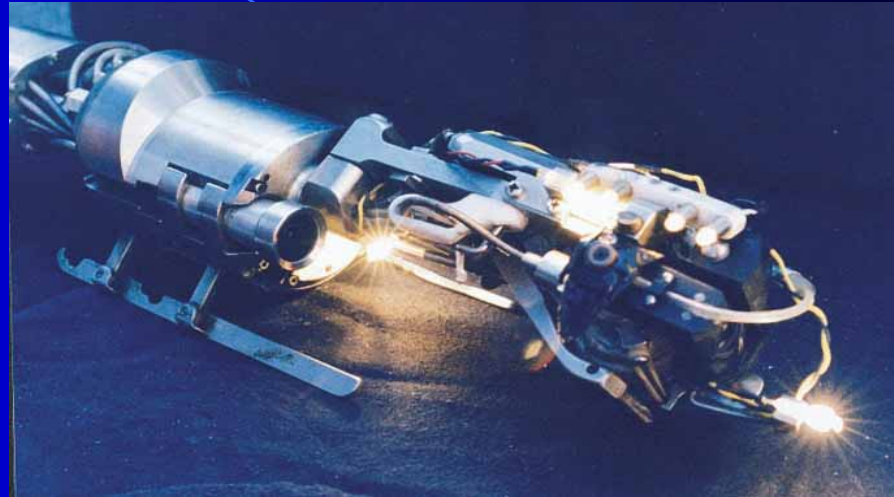
PSC approved CIPL for 6" & 8" Cast Iron mains
Service liners up to 2" diameter with offsets

CIPL

Realized Benefits

- Avoided cost of excavation and replacement of cast iron
- Savings of approximately \$300/ft
- Since 1992, industry has saved approximately \$25 million
- Installation activity showing increase in '04 (14,000' installed in '04 out of total of 85,000 since inception)

CISBOT



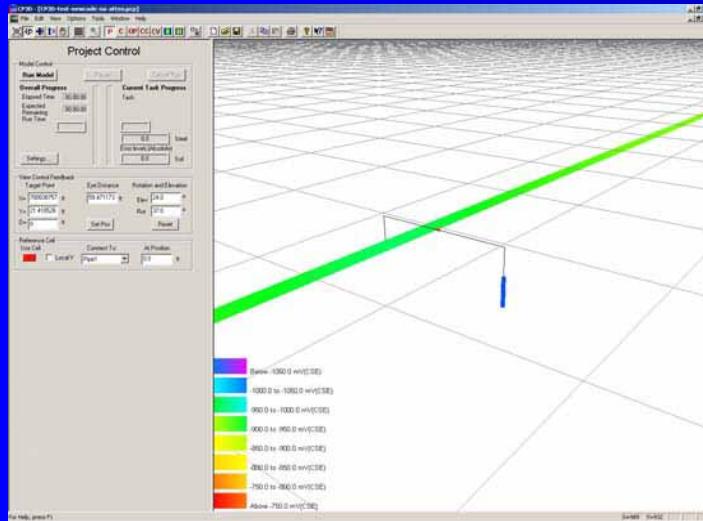
CISBOT

- Seal all joints 150' in each direction
- Use in “prior-to-paving” streets

CISBOT – Realized and/or Projected Benefits

- Improved productivity
- Automation
- Savings of \$450/joint
- Additional expense for preventative maintenance
- Net projected savings for Con Ed alone: \$180,000/yr

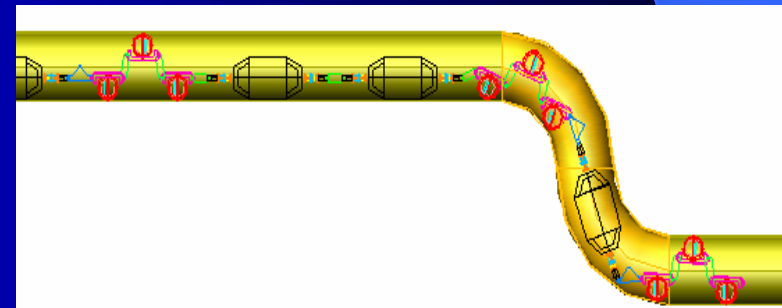
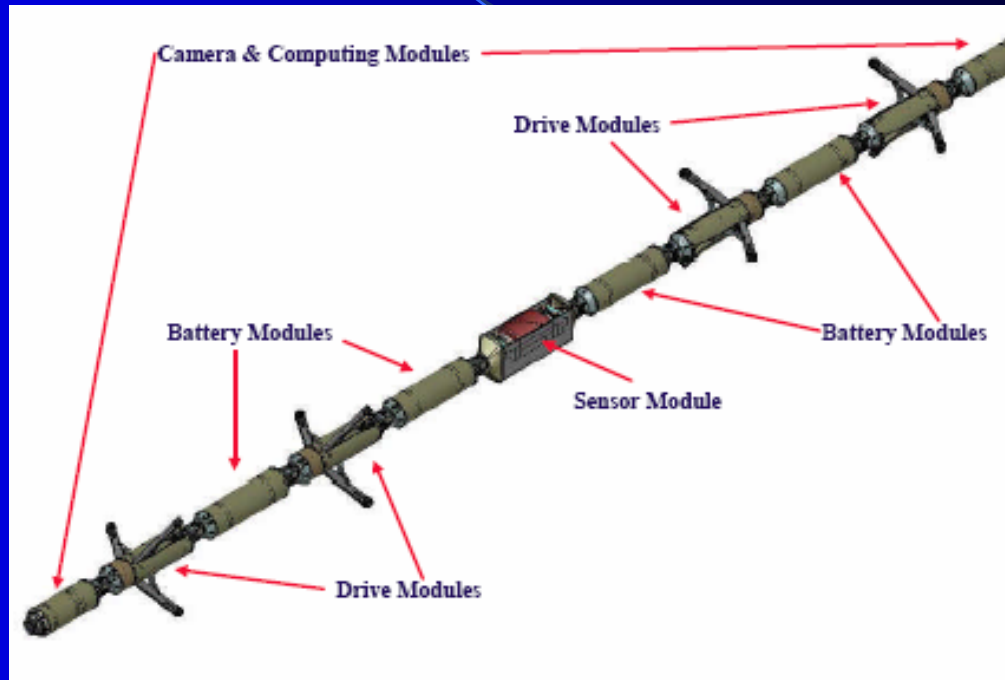
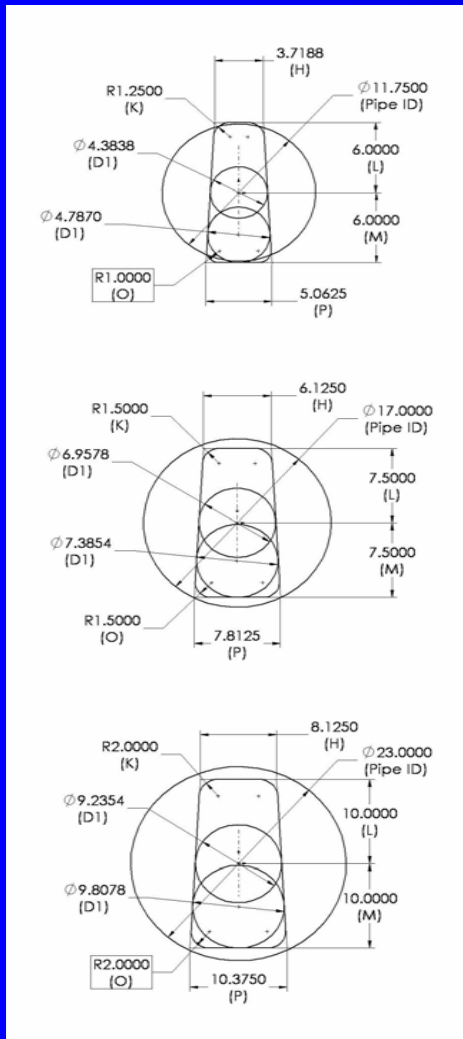
Direct Assessment



Direct Assessment Realized and Projected Benefits

- Prolongs life of transmission system
- Reduces customer downtime
- Con Edison's estimated savings:
DA versus Hydrotesting \$1.0 million/mile

Inspection of Unpiggingable Transmission Mains



Inspection of Un-piggable Transmission Mains Projected Benefits

- Performed with pipe in service
- Avoids hydro-testing
- Avoids prohibitive alteration to system and associated customer downtime
- Estimated savings: \$40,000/mile
 - @ 10 miles/yr or \$400,000 per year

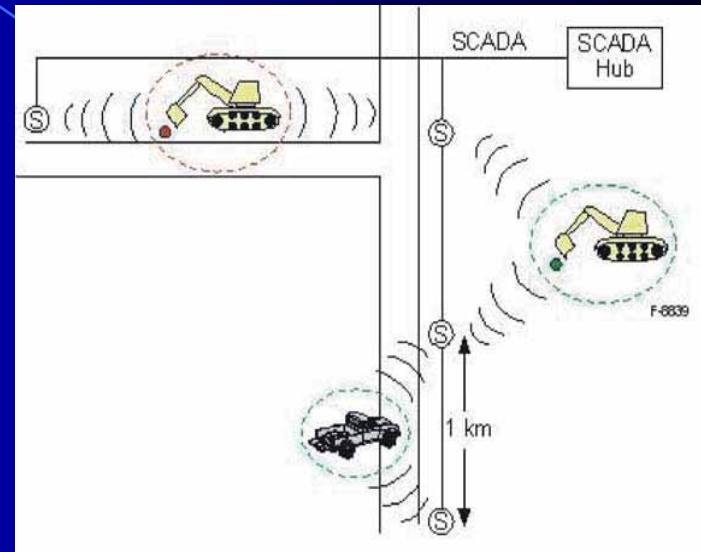
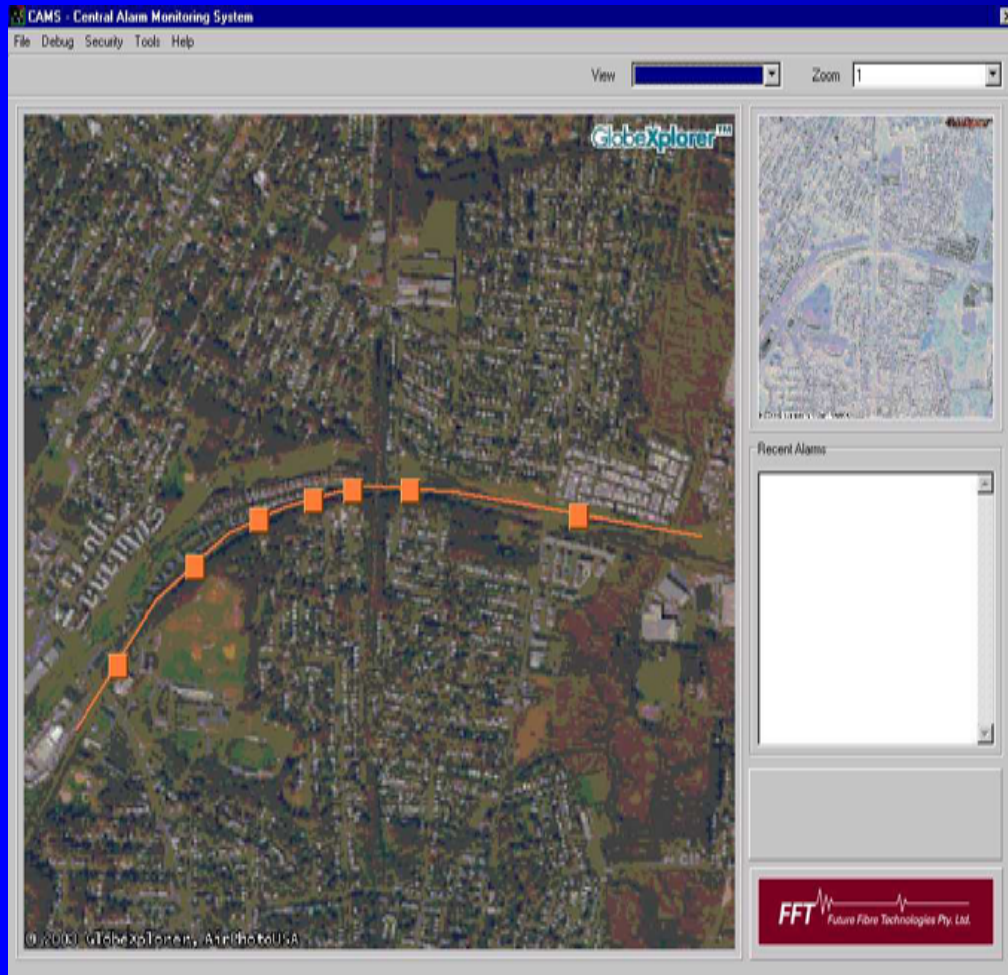
Remote Methane Leak Detector



Remote Methane Leak Detector Projected Benefits

- Reduces need to “walk” the service
- Productivity improvement 20 – 40%
- Savings of >\$500,000 per year
- Safety implications
 - Access hard-to-reach areas such as inside buildings, over fences and around dogs, overpasses
- Verifies leak status when can't get access

Prevention of Third Party Damage



Third Party Damage Prevention Projected Benefits

- Prevent third party damage to line
 - Avoids hazards, customer downtime, costly repair/replacement
- Over (3000) third-party damage incidents per year in New York State
- Even a small reduction could save millions

Role and Benefits of R&D

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Role and Benefits of R&D

How to make it work

- Product Field Testing
- Decision-makers as champions
- Seed money
- Gain buy-in at early stage
- New technology culture
- Open-minded regulators re: new tools/practices
- Early input from commercializers, continued relationship to ensure ROI

Role and Benefits of R&D

Bottom line

- Con Edison takes an active role in R & D
- We work with people inside and outside the company to define and develop products from R & D
- Despite the risk, projects that succeed have a solid impact on the company
- Industry and Government work well together
 - to leverage R & D funds
 - to shape policy that supports successful R & D implementation