



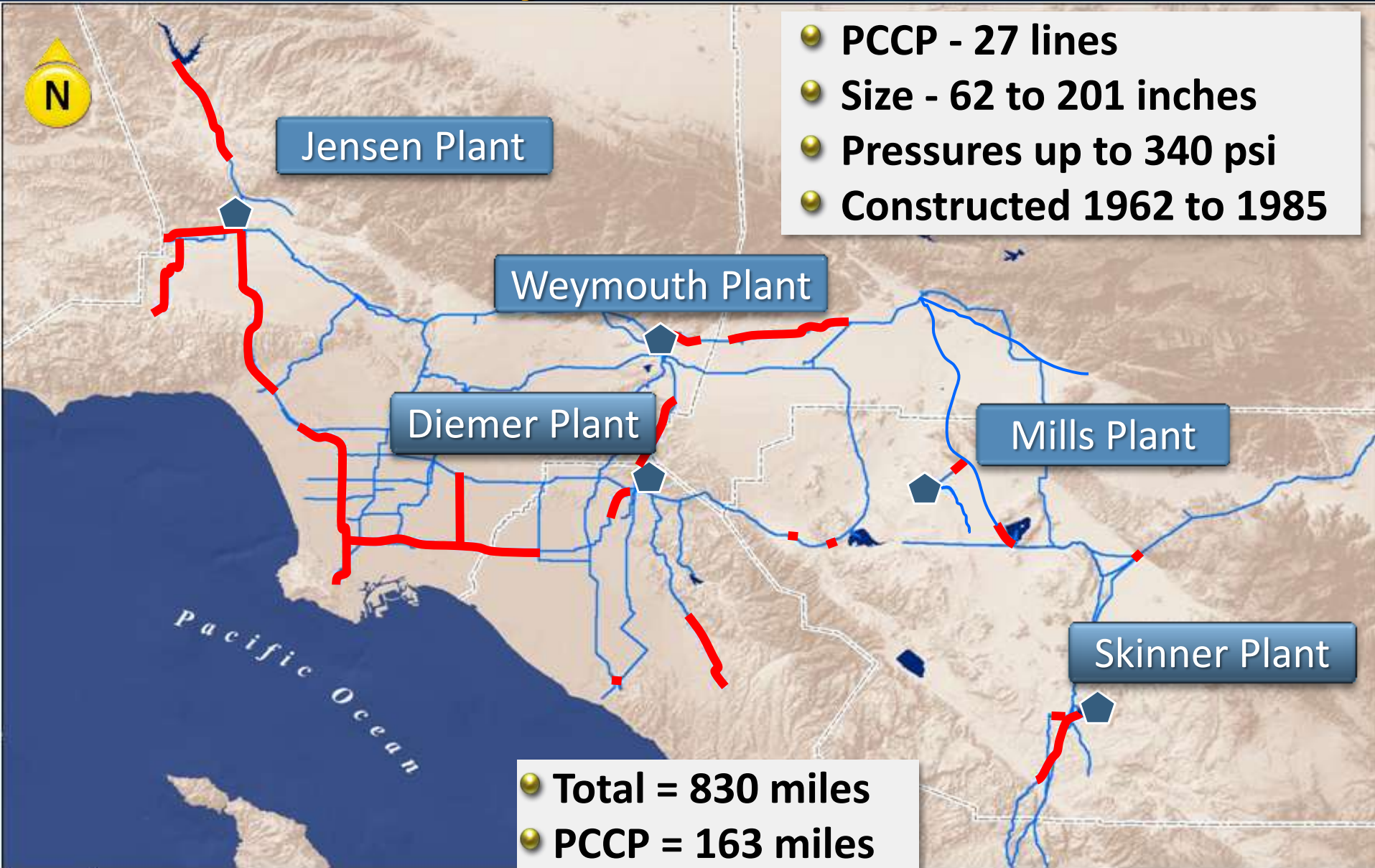
Prestressed Concrete Cylinder Pipe Rehabilitation & Replacement Program

Engineering & Operations Committee

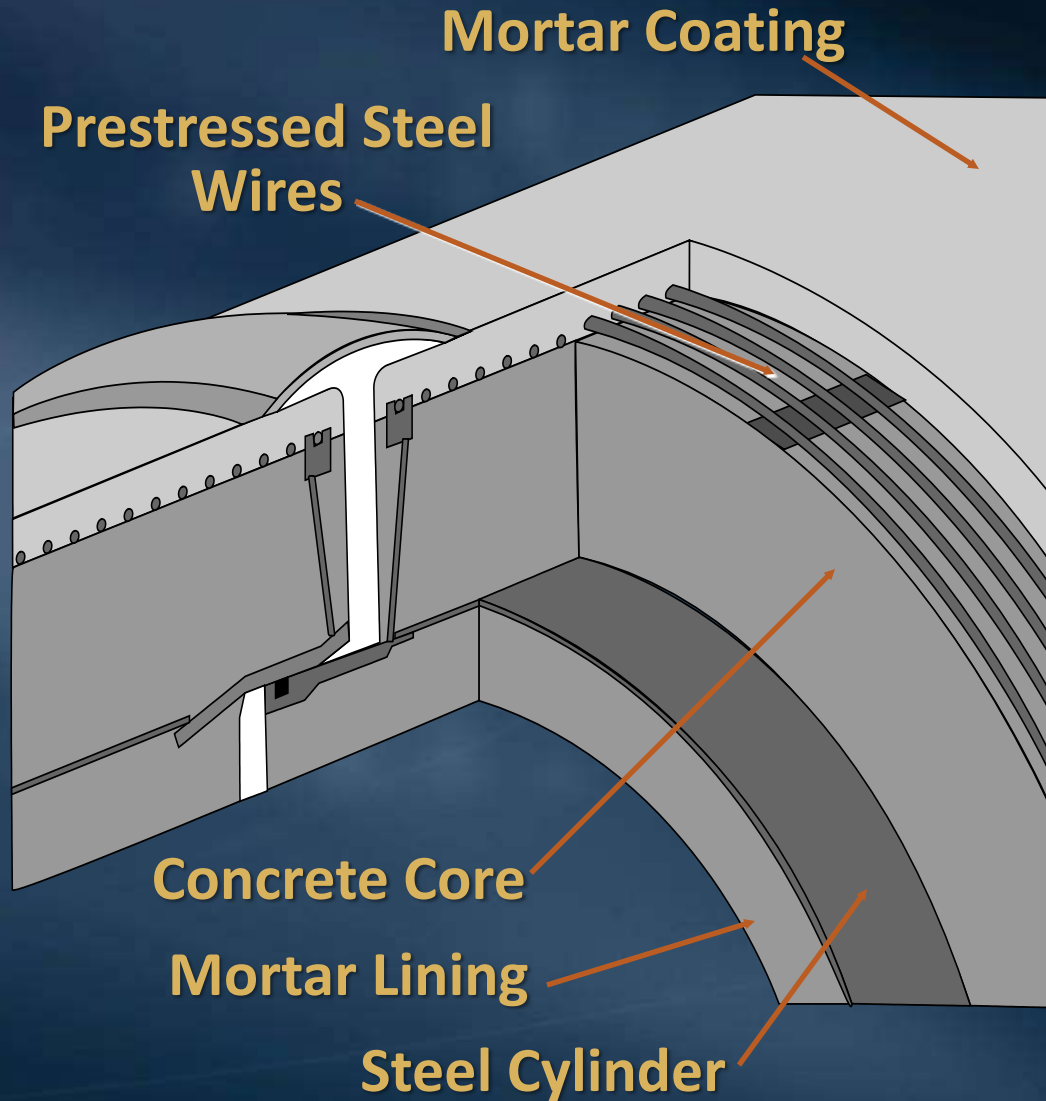
Item 6a

August 19, 2013

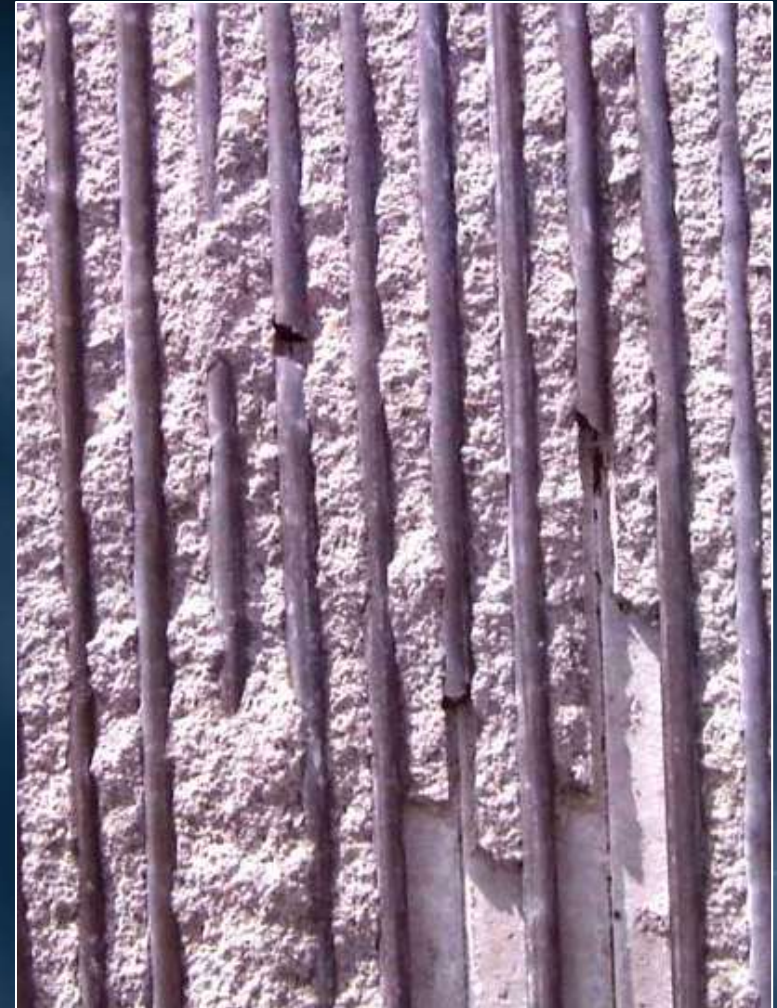
Distribution System



Prestressed Concrete Cylinder Pipe (PCCP) Cross Section



**Broken
Prestressing Wires**



Industry Experience w/ PCCP

- Viewed as economical alternative to steel pipe
 - Handles high pressures
- Elevated risk of failure
 - Broken prestressing wires
 - Corrosive surrounding soils
 - Third party stray current interference
- Reduced service life vs steel pipe
- Failures often catastrophic
- Requires diligent monitoring by pipe owner

Metropolitan Experience

- Electromagnetic inspections initiated in 2000
 - Three cycles of inspections completed
 - One rupture, six leaks
 - 7,534 feet repaired to date – \$65 M
- PCCP Assessment - over 13 yrs of electromagnetic inspections & urgent repairs
 - Little or no deterioration of 63 miles (22 pipelines)
 - Continued deterioration of 100 miles (5 pipelines)
- Former strategy
 - Install cathodic protection when needed
 - Repair individual distressed pipe segments
- Higher cost to repair single pipe segments

Moving Forward

- **Proposed New Strategy**
 - **Initiate projects to reline or replace entire PCCP lines**
 - **Continue regular electromagnetic inspection**
 - **Install cathodic protection where needed**
 - **Perform urgent repairs as needed**
- **Proactive replacement program**
- **Improves reliability with completion of each pipeline reach**
- **Lower cost per pipe segment**

Staff Recommendation

- **Begin planning in CIP to reline or replace 5 pipelines**
 - **Second Lower Feeder**
 - **Sepulveda Feeder**
 - **Rialto Pipeline**
 - **Allen-McColloch Pipeline**
 - **Calabasas Feeder**
- **Reduced life expected for these pipelines**
 - **Extensive repair history**
 - **Located in corrosive soils**
 - **Proximity to stray currents**
- **Initial rehabilitation – Second Lower Feeder**

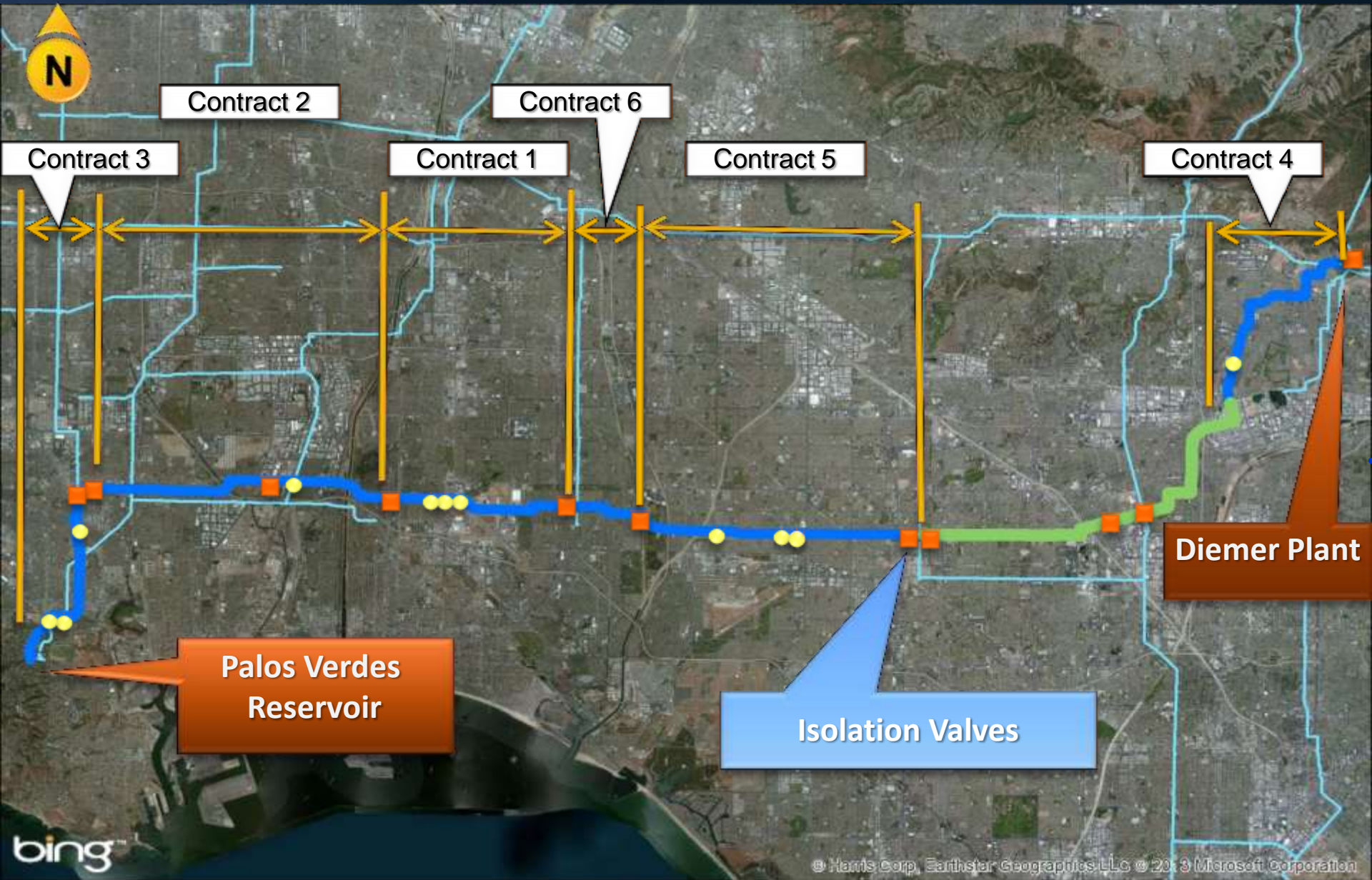
Second Lower Feeder



Second Lower Feeder

- History of wire breaks
 - Over 500 pipe segments with wire breaks
 - 231 segments repaired in 1999 & 2001
 - Repair costs - \$6.9 M
 - 284 segments remaining with wire breaks
- Current status
 - Increased wire breaks in 19 segments
 - 25 wire breaks in one segment
 - July 2013 – Urgent repairs authorized at 3 locations

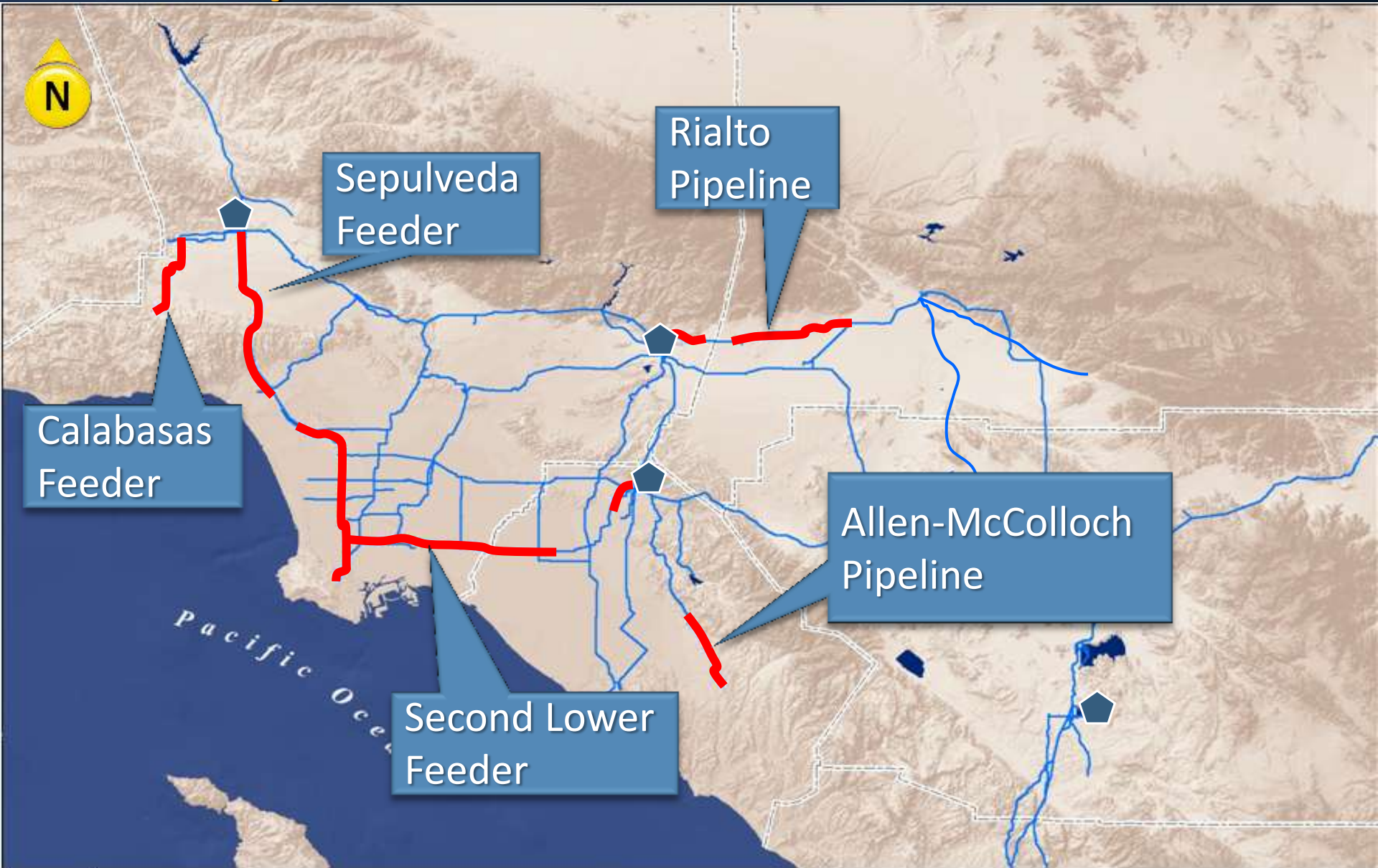
Second Lower Feeder



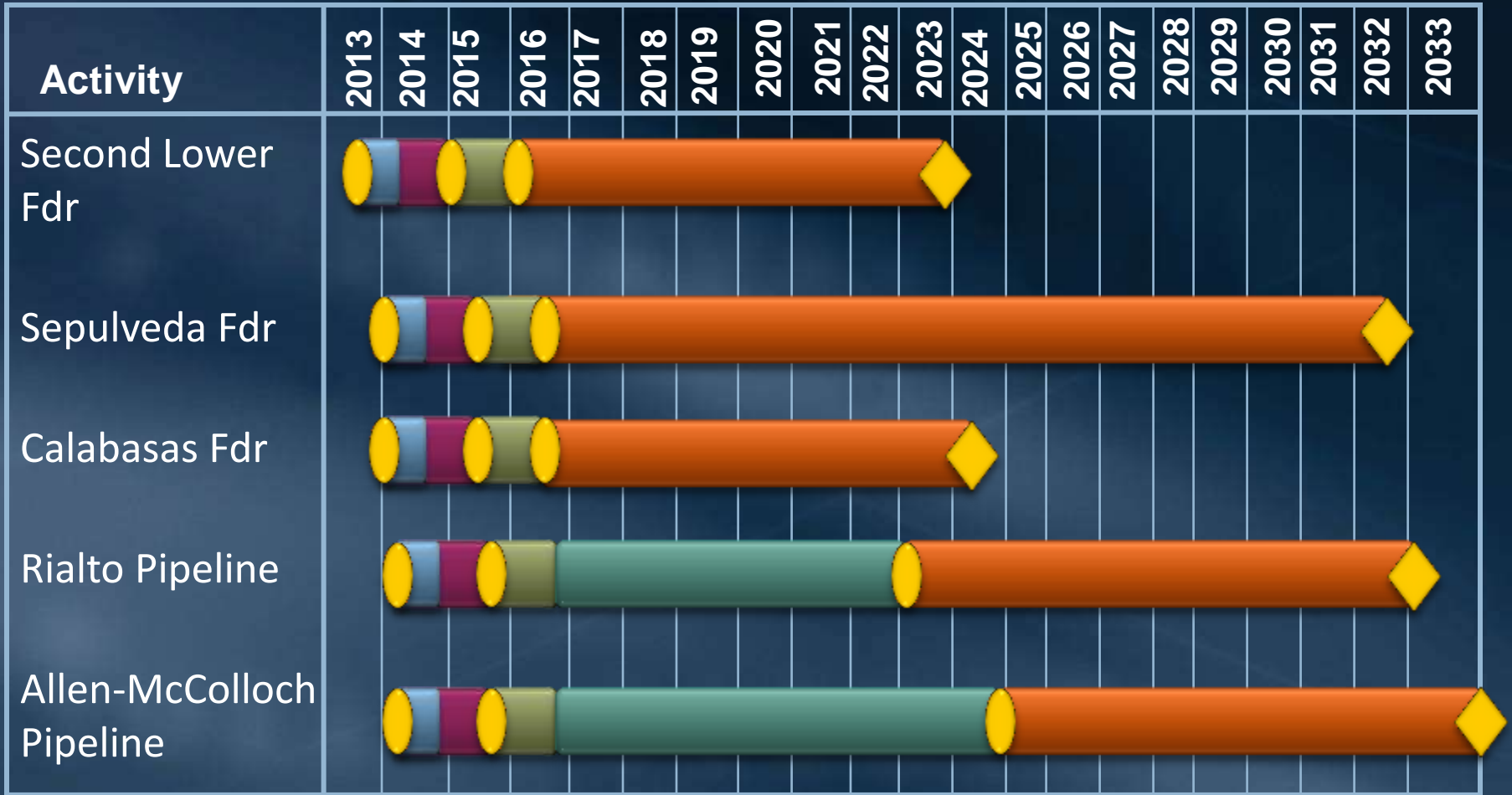
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Metropolitan's PCCP Lines



Schedule – Long -Term Rehabilitation of 5 PCCP Lines



- Preliminary Design
- Env. Docs.
- Monitoring
- Final Design
- Construction
- Board Action
- Completion

Next Steps

- **September 2013 - Planned action to authorize preliminary design of long-term rehabilitation of the Second Lower Feeder**
- **Early 2014 - Staff will return with a long-term rehabilitation plan for remaining 4 lines**

