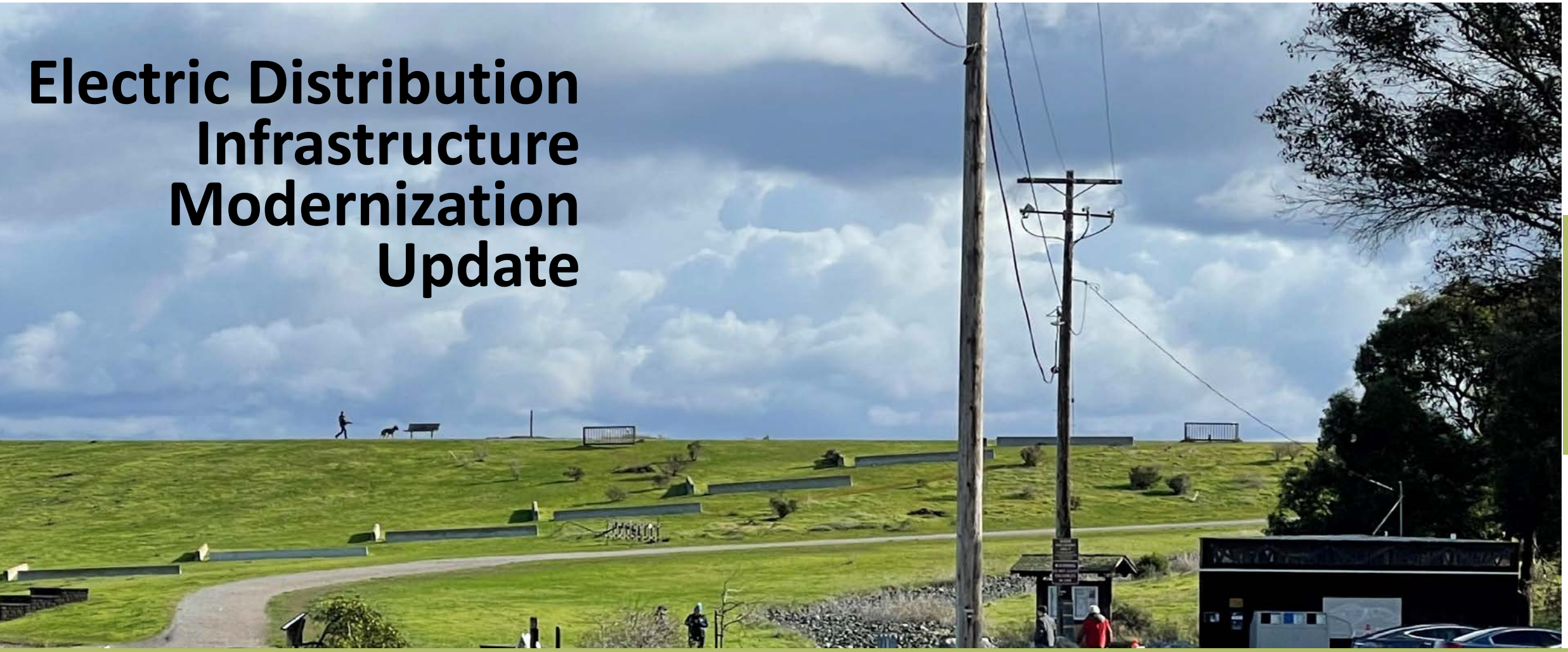
UAC MEETING 3
June 07, 2023
☑ Received Before Meeting
Staff: Tomm Marshall

CITY OF PALO ALTO

Electric Distribution Infrastructure Modernization Update



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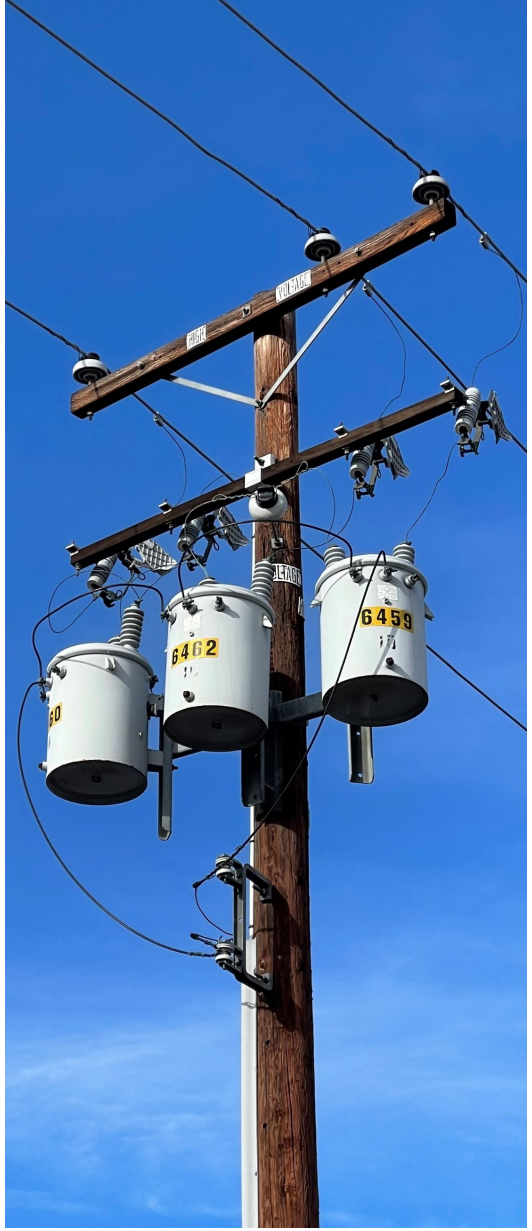
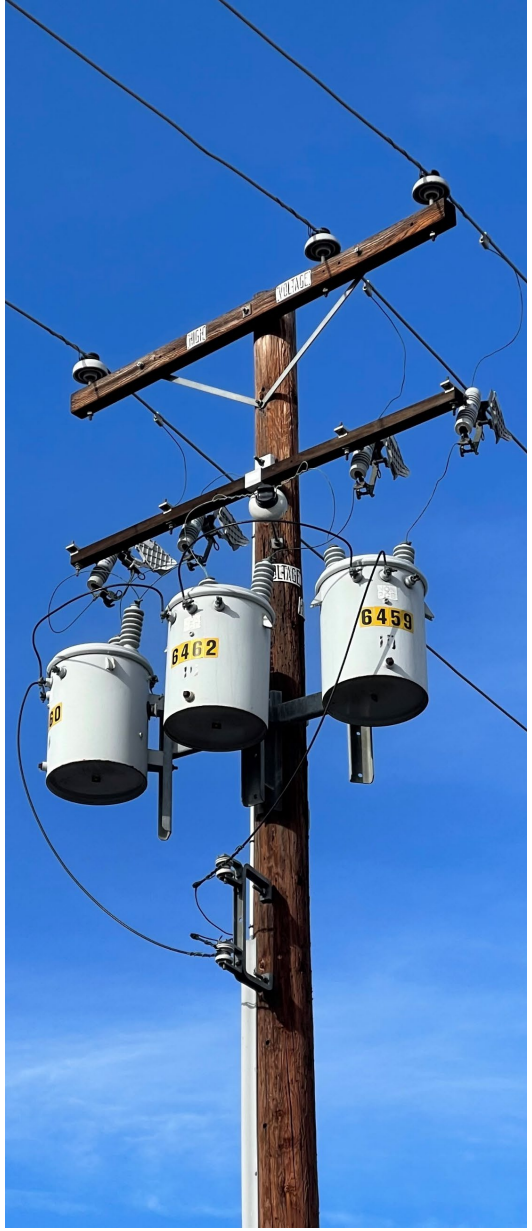


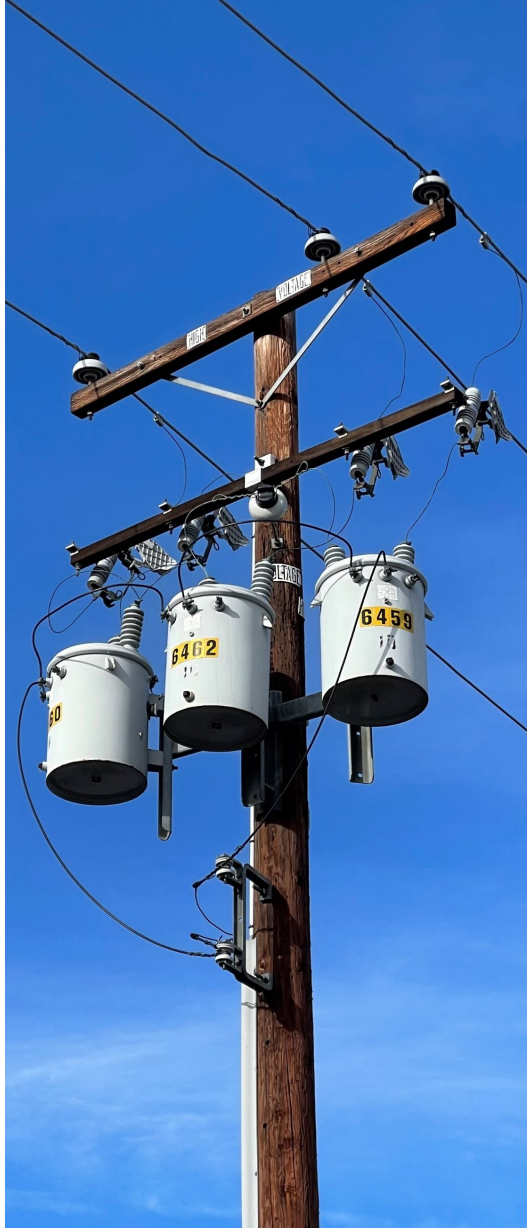
Electric Infrastructure Analysis Report

- **Peak Demand – 6 kVA per home.**
- **Capacity increases – Distribution transformers and secondary conductors.**
- **12 kV Circuit Ties**
- **Substation Transformer Upgrades**
- **Estimated Cost - $220 to $306 Million**



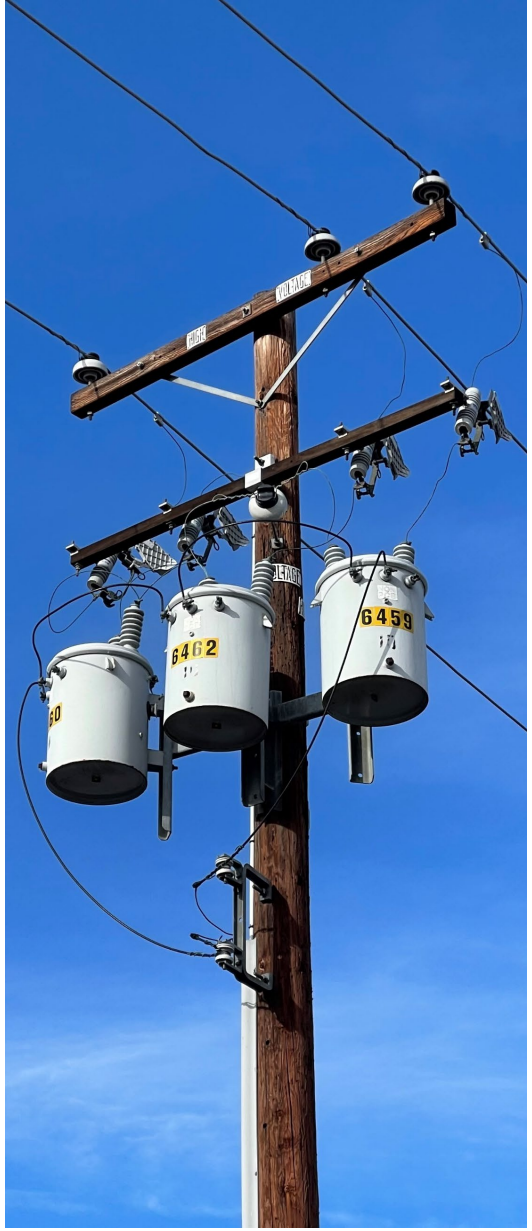
Peak Load Mitigation

- Technologies to reduce coincident loading are in development.
- Need to do a cost analysis – upgrades vs. mitigation
- As technologies are developed, upgrade plans can be adjusted to incorporate new technologies.



System Modernization Tasks

- Convert Overhead System from 4kV to 12kV
- Increase Overhead System Capacity
- Convert Underground System from 4kV to 12 kV
- Upgrade Underground System Capacity
- Increase Substation System Capacity
- Install Cost Effective Technologies to Reduce Peak Load and Improve Reliability

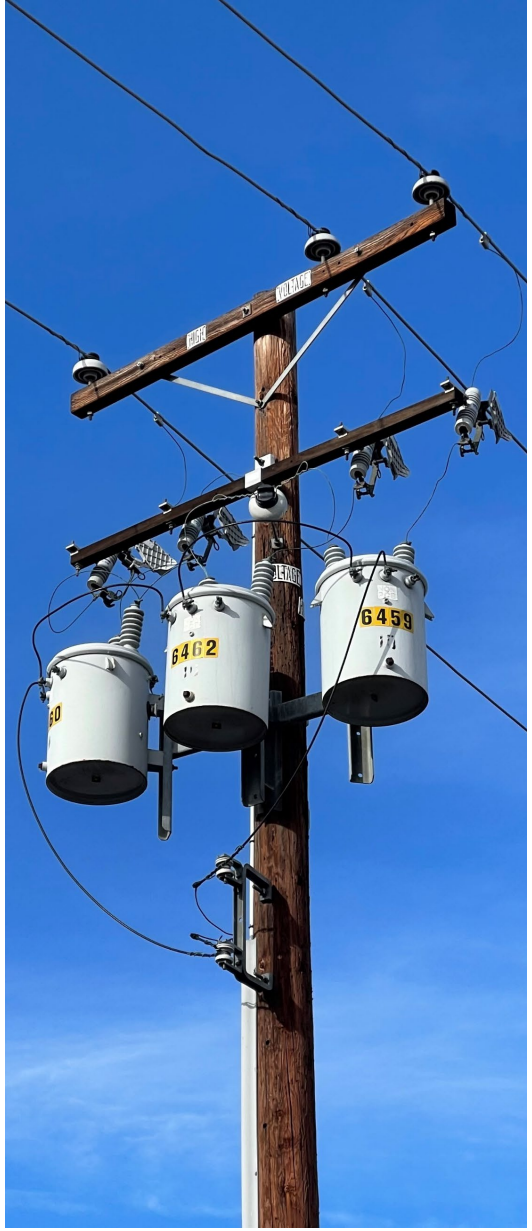


Task I - Trial Upgrade Project

Converting 4 kV overhead circuits to 12 kV.

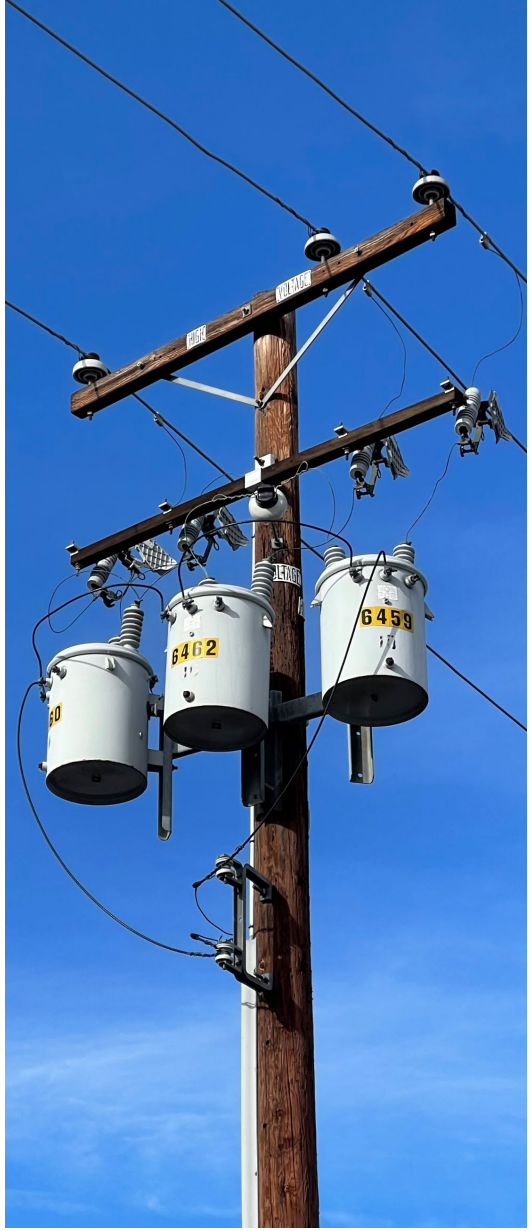
Trial project currently in design/construction (Leland Manor Area)

- **Designed for 6 kVA per home.**
- **Construction started in the spring of 2023.**
- **Progress dependent upon transformer availability.**



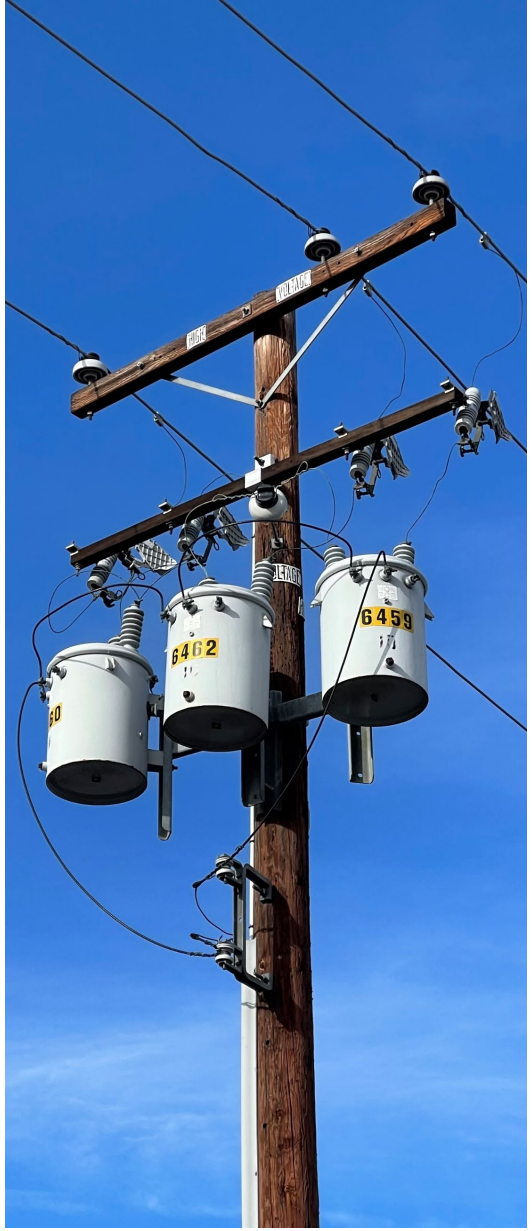
Task II – Upgrade Overhead Systems

- Add capacity to the overhead system by upgrading transformers and secondary systems.
- Upgrade to residential circuits.
- Reduce barriers limiting electrification of homes.
- Expected to start design and construction in late 2023.
- Construction completion by end of 2027.



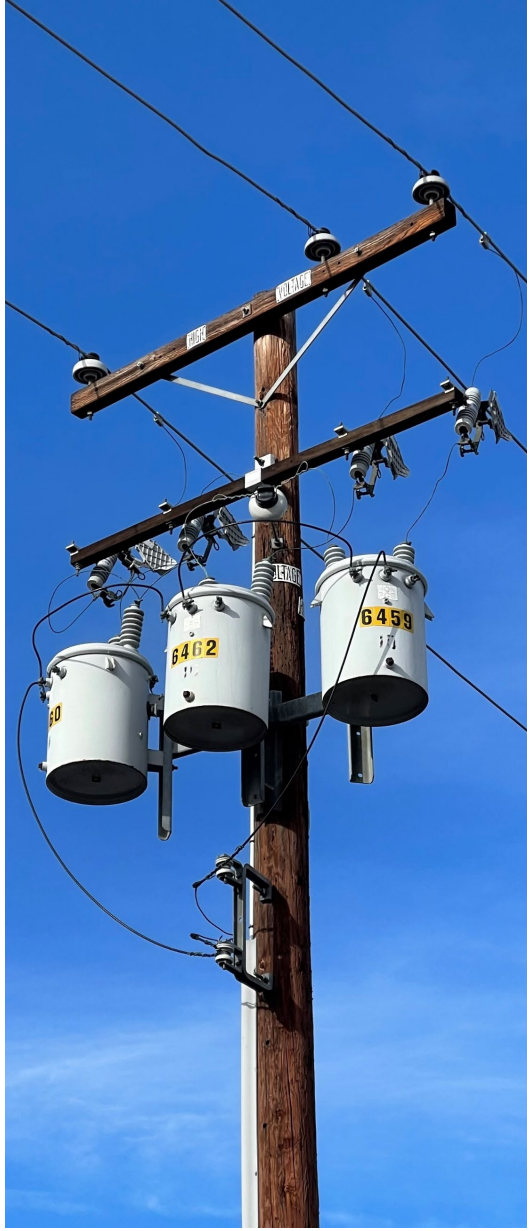
Task III– Upgrade Underground Systems

- Add capacity to the underground system by upgrading transformers and secondary systems.
- Difficult to upgrade due requirements for transformer locations and installation of new substructure.
- Reduce barriers limiting electrification of homes.
- Expected to start design and construction in late 2026.
- Construction completion by end of 2030.



Task IV– Upgrade Substations and Circuits

- **Add capacity to Substations.**
- **Install Circuit ties.**
- **Design and construction in late 2027**
- **Construction completion by end of 2030.**

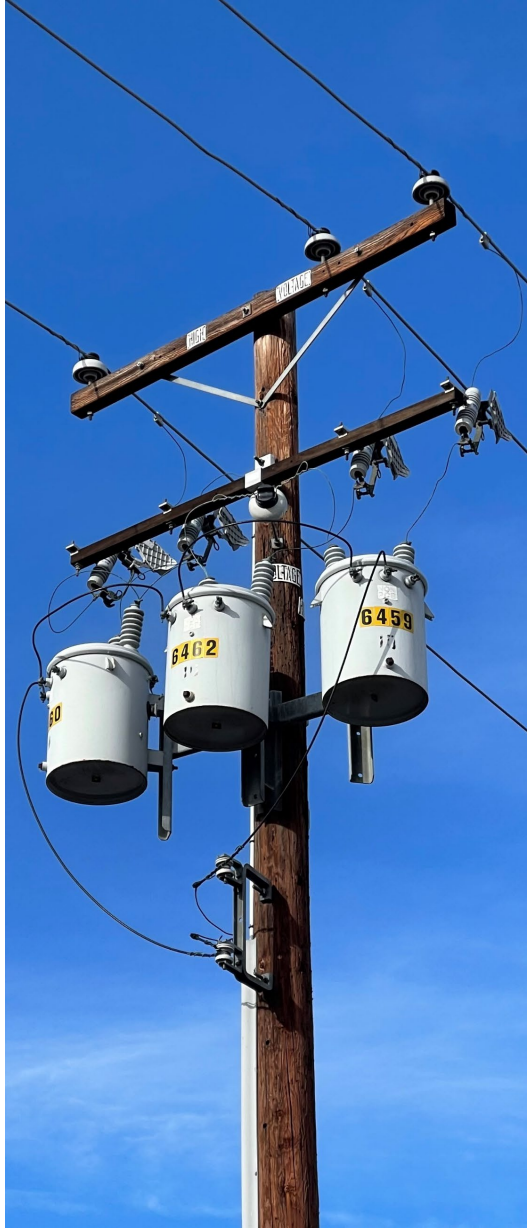


Task V – Load Mitigation and Reliability

- **Complete Study on the Cost Effectiveness and Viability in 2023.**
- **Design and Implement Reliability Projects. 2024- 2032**
- **Implement Cost Effective and Viable Load Mitigation Projects. 2024-2030**

Project Timeline

ID	Task Mode	Task Name
1		Pilot Project
2		Upgrade OH Systems
3		Upgrade Underground Systems
4		Substation Capacity and Circuit Ties
5		Load Mitigation Technologies



Funding

- **Project has been budgeted in the 5-year budget.**
- **Submitted for a matching DOE Grid Resiliency and Innovation Partnership (GRIP) Grant.**
- **Revenue bonds.**