Wildfire Safety Strategy:
Undergrounding

Hawaiian Electric

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Undergrounding Process and Impacts

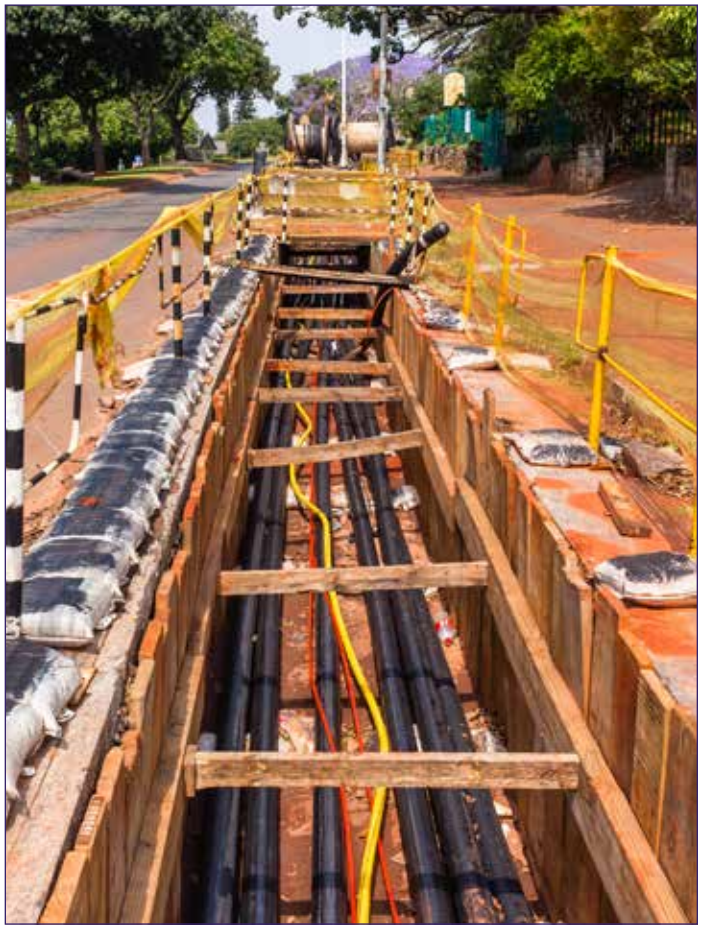
Undergrounding power lines is the process of burying electrical power lines beneath the ground, removing visible overhead power lines and poles, and replacing them with cables installed in trenches underground. Hawaiian Electric is committed to identifying sections of its distribution system where undergrounding is the most efficient hardening mitigation.

PRIVATE PROPERTY

The service conversion to underground any existing overhead lines on private property would be at the property owner's expense.

PUBLIC PROPERTY

On public property, any service conversion of existing distribution and service voltage lines from overhead to underground would be paid for by the customer or applicant requesting the change. Per Tariff Rule 13 for Maui County, approved by the State of Hawaii Public Utilities Commission, the customer or applicant requesting the change would be responsible for the difference in cost to install the underground facilities, less the estimated cost of the net salvage of the overhead facilities that would be removed.



Undergrounding construction process

The Benefits and Drawbacks of Undergrounding

BENEFITS OF UNDERGROUNDING

Reliability – Underground power lines are more reliable than overhead lines and help lower wildfire risk – particularly during hurricanes and severe weather, when trees, vegetation and wind-blown debris can cause outages to overhead lines.

Aesthetics – Improve the aesthetics of the neighborhood by eliminating visible overhead infrastructure, contributing to a visually appealing environment.

DRAWBACKS OF UNDERGROUNDING

Prone to flooding – Underground powerlines are less impacted by high winds but can be more susceptible to flooding compared with overhead powerlines.

Restoration time – When an underground powerline has a short circuit or "fault," locating the point of failure is more time consuming and requires the use of specialized equipment and contractors from the mainland. This often results in longer repair times (from multiple hours to multiple days or months) before crews can place an underground powerline back into service.

Operations and repairs – Underground powerlines usually require the digging of a continuous trench for the entire circuit. The trenching and other underground construction requires more extensive permitting and can have a greater archeological impact to the land where the powerline is installed.

Environmental and cultural impacts – Underground powerlines cannot be installed in remote locations or in rocky or steep inclines. Power equipment and wheeled vehicle access is required to dig trenches, pour concrete, and pull cables. Remote overhead lines cannot be replaced with underground powerlines in the same location and route. Alternative routes, within or alongside roads will be needed. Cultural sensitivities and related historical preservation permitting and regulation in certain areas must also be taken into consideration.

Longer installation timelines – Permitting and construction of underground powerlines often takes 4-6 years compared with overhead powerlines, which typically take 2-3 years to permit and construct.

Cost – Reducing wildfire risk well beyond 70% would come with a steep escalation in costs largely due to the need for significant additional undergrounding and the installation of additional miles of covered conductor. Underground powerlines cost approximately 5-10 times more to install compared with an equivalent overhead powerline. In 2024, the cost estimate is $11M per mile for underground powerlines compared to $1M per mile for overhead lines.

Regulations – In Maui County there are regulations requiring developers to pay for undergrounding power lines. In O'ahu, there are both city and county-level ordinances that have been in place for decades that require developers to bury power lines under certain circumstances.

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