

SUPPLEMENTAL DIRECT TESTIMONY OF
KERSTAN J. WONG

PROJECT MANAGER
PROJECT MANAGEMENT DIVISION
ENERGY DELIVERY PROCESS AREA
HAWAIIAN ELECTRIC COMPANY, INC.

Subject: Description of the Proposed Changes

1 INTRODUCTION

2 Q. Please state your name and business address.

3 A. My name is Kerstan J. Wong and my business address is 820 Ward Avenue,
4 Honolulu, Hawaii.

5 Q. Have you previously submitted testimony in this proceeding?

6 A. Yes. I submitted written direct testimony and exhibits as HECO T-2 and HECO
7 T-6.

8 Q. What is the scope of your supplemental direct testimony?

9 A. My supplemental direct testimony will describe two proposed changes (“Change
10 #1” and “Change #2”) to Phase 1 of the East Oahu Transmission Project (“46kV
11 Phased Project”). Change #1 results from our ability to use six existing ducts in a
12 common ductline between the existing Makaloa and McCully Substations, instead
13 of installing a new ductline. Mr. Morikami’s testimony, HECO T-7 (pages 3-5),
14 indicated that this was a possibility. Change #2 results from our further review of
15 the use of an existing overhead 46kV line on Pumehana and Lime Streets to
16 electrically connect the existing Pukele 2 46kV overhead circuit on Date Street to
17 the existing Archer 46 46kV underground circuit at McCully Substation.

18 In addition, my supplemental testimony will describe a recent City and
19 County of Honolulu (“City”) directive regarding re-pavement of streets after
20 trenching has occurred and how it may impact the 46kV Phased Project.

21 Q. Please describe the reason for the proposed changes to Phase 1 of the 46kV
22 Phased Project.

23 A. As discussed by Ms. Ishikawa in HECO T-4, the system is already at risk for a
24 major power outage and that risk will only increase in time. The reality of this
25 risk was heightened with the loss of the Pukele Substation on the morning of

1 March 3, 2004. Therefore, timely implementation of Phase 1 is critical to address
2 this risk. The proposed changes enhance the timely implementation of Phase 1 by
3 reducing the potential for project delays.

4
5 CHANGE #1

6 Q. Please briefly describe proposed Change #1 of the 46kV Phased Project.

7 A. As described in the Application filed on December 18, 2003 and my testimony,
8 HECO T-2 (pages 2-3), as part of Phase 1, we planned to install two new 46kV
9 circuits in a new underground ductline between the existing Makaloa and
10 McCully Substations. As noted in Mr. Morikami's testimony, HECO T-7 (pages
11 3-5), however, there is an existing ductline between these two substations, which
12 follows the same route as the proposed new ductline that might be used for the
13 proposed circuits. As Mr. Morikami explains in HECO ST-7, field inspections
14 and further engineering review now have confirmed that a substantial portion of
15 the existing ductline can be used to install the two new 46kV circuits. As a result,
16 Change #1 involves the utilization of this existing ductline, where practical, for
17 the proposed circuits.

18 The existing ductline currently contains 46kV and 12kV underground
19 circuits. Change #1 involves the removal of these existing circuits from the
20 existing ductline to provide duct space for the new 46kV circuits. To remove the
21 existing 12kV circuits, modifications to the 12kV system in the area are required.
22 However, on Makaloa Street, between Makaloa Substation and Poni Street (Daiei
23 parking structure), the 12kV circuits must remain in the existing ductline. Thus,
24 there would only be enough ducts available in the ductline for one of the proposed
25 46kV circuits. Therefore, Change #1 would still involve the construction of a new

1 ductline from Makaloa Substation to Poni Street for the other proposed 46kV
2 circuit.

3 In summary, Change #1 would allow one of the two new proposed 46kV
4 circuits to be installed in the existing ductline from Makaloa Substation to
5 McCully Substation. The other new proposed 46kV circuit would be installed in a
6 new ductline from Makaloa Substation to Poni Street, then transition into the
7 existing ductline at Poni Street and continue in the existing ductline all the way to
8 McCully Substation. A more detailed description of Change #1 is provided in
9 HECO-ST-201.

10 Q. How long is the proposed new ductline on Makaloa Street from the Makaloa
11 Substation to Poni Street for Change #1?

12 A. The total length of the proposed new ductline on Makaloa Street from the
13 Makaloa Substation to Poni Street is approximately 1,000 feet.

14 Q. How much new ductline construction is involved with Change #1 as compared to
15 the original proposal for this portion of the project?

16 A. Change #1 involves the construction of a new ductline consisting of 4-5”
17 concrete-encased ducts approximately 1,000 feet in length. The original proposal
18 involves the construction of a new ductline consisting of 8-5” concrete-encased
19 ducts approximately 3,450 feet in length. Therefore, Change #1 would involve
20 approximately 2,450 feet less of new ductline construction and half as many new
21 ducts as compared to the original proposal.

22 Q. What are the advantages associated with Change #1?

23 A. The advantages associated with Change #1 are the following: 1) Trenching is
24 eliminated on Kalakaua Avenue, which was an area of concern for traffic
25 disruption as noted in Mr. Harrington’s testimony, HECO T-8; 2) Engineering and

1 construction costs are reduced; and 3) Trenching is avoided in narrow residential
2 streets along Fern, Hauoli, and Lime Streets. Mr. Harrington's testimony, HECO
3 ST-8, and Ms. Oshiro's testimony, HECO ST-9, respectively, will discuss the
4 reduced effects of construction and cost reduction associated with Change #1.

5 Q. Are there any disadvantages associated with Change #1?

6 A. Yes, there are two disadvantages with Change #1, although the advantages
7 substantially outweigh the disadvantages. First, there will be no spare duct
8 available for the new circuits in sections of the project where the existing ductline
9 would be utilized. The lack of a spare duct would only become a problem,
10 however, if there were a cable failure that significantly damages the ductline,
11 which is a rare occurrence. Second, modifications of the existing 12kV system in
12 the area are required to make the existing ductline between Makaloa and McCully
13 Substations available for the two new 46kV underground circuits. One
14 modification of note is a 12kV cable installation in existing ductlines on Kapiolani
15 Boulevard, which can be characterized as a heavily traveled roadway. The
16 installation of a 12kV cable in existing ductlines on Kapiolani Boulevard is a
17 short-term impact in regards to traffic, which could be mitigated by doing the
18 work at night.

19 Q. Why was Change #1 not proposed in the Application filed on December 18, 2003?

20 A. At the time of the Application filing, it was unclear whether the existing ducts
21 could be utilized for the new 46kV circuits. We indicated in HECO T-7 (pages 3-
22 5) that we might be able to use the existing ductline, and that it would be
23 advantageous if we could do so, but that there were certain practical issues that
24 needed to be examined and resolved. Since the Application, further field
25 inspections and engineering review concluded that utilizing the existing ductline

1 appears feasible. Mr. Harrington further supports this conclusion, as noted in his
2 testimony, HECO ST-8.

3
4 CHANGE #2

5 Q. Please briefly describe proposed Change #2 of the 46kV Phased Project.

6 A. As described in the Application and my testimony, HECO T-2 (pages 3-4), one
7 new 46kV circuit was to be installed in a new underground ductline to connect the
8 existing Archer 41 46kV overhead circuit on Pumehana Street with the existing
9 Pukele 2 46kV overhead circuit on Date Street. The proposed connection was to
10 be done in the intersection of Date and Pumehana Streets. This is shown on page
11 1 of HECO-ST-202. Change #2 would extend the underground connection from
12 the existing Pukele 2 46kV overhead circuit at the intersection of Date and
13 Pumehana Streets to the Archer 46 46kV underground circuit at the intersection of
14 Lime and Pumehana Streets. Therefore, the existing Archer 41 46kV overhead
15 circuit on Pumehana Street would not be used as an electrical pathway to connect
16 the Pukele 2 and Archer 46 circuits. This is shown on page 2 of HECO-ST-202.
17 A more detailed description of Change #2 is provided in HECO-ST-201.

18 Q. Why does Change #2 involve the existing Archer 46 46kV underground circuit?

19 A. One of the objectives for this portion of the project is to electrically connect the
20 Archer 46 46kV underground circuit at McCully Substation to the Pukele 2 46kV
21 overhead circuit that ends on Date Street. The proposal in the Application would
22 have utilized a portion of the Archer 41 46kV overhead circuit on Pumehana
23 Street and the new underground 46kV connection in the intersection of Date and
24 Pumehana Streets to accomplish this objective. For simplicity, the “physical”
25 connection of the original proposal is described in the Application and other

1 supporting testimonies as opposed to the “electrical” connection, which would be
2 more difficult for the layperson to follow. With Change #2, the Archer 41 46kV
3 overhead circuit is not needed because a direct underground connection between
4 the Archer 46 46kV underground circuit and the Pukele 2 46kV overhead circuit
5 is now being proposed.

6 Q. How long is the proposed new ductline on Pumehana Street for Change #2?

7 A. The total length of the proposed new ductline on Pumehana Street is
8 approximately 720 feet.

9 Q. How much new ductline construction is involved with Change #2 as compared to
10 the original proposal for this portion of the project?

11 A. Change #2 involves the construction of a new ductline consisting of 4-5”
12 concrete-encased ducts approximately 720 feet in length. The original proposal
13 involved the construction of a new ductline consisting of 4-5” concrete-encased
14 ducts approximately 130 feet in length. Therefore, Change #2 would involve
15 approximately 590 feet more of new ductline construction as compared to the
16 original proposal.

17 Q. What are the advantages associated with Change #2?

18 A. As stated in HECO-ST-201, the advantages for implementing this change are as
19 follows:

20 ■ The proposed change maintains the same level of operational flexibility near
21 the McCully Substation as is available today, which is an overall benefit.

22 Currently, the existing Archer 41 46kV overhead circuit on Pumehana Street
23 has essentially no current flow under normal operating conditions, which
24 makes this circuit readily available for use in contingency situations on the
25 46kV system. For example, maintenance or unplanned outages of certain

1 46kV lines being served from Pukele or Archer Substations could be manually
2 backed up by this circuit. With the initially proposed connection, this portion
3 of the Archer 41 46kV overhead circuit would be used on a daily basis,
4 carrying approximately 400 amperes of current under normal operating
5 conditions. Therefore, the use of this portion of the circuit on a daily basis
6 would limit its available capacity to address contingency situations on the
7 46kV system.

- 8 ■ The proposed change reduces a potential area of controversy by maintaining
9 the status quo of essentially no current flow under normal operating conditions
10 on the Archer 41 46kV overhead circuit on Pumehana Street, adjacent to
11 Lunalilo Elementary School. Given the concern expressed by some area
12 residents and their legislators regarding the proposed new power lines,
13 particularly in the immediate area of this school, minimizing changes in the
14 operation of the system in this particular area reduces potential project delays
15 which could be brought on by heightened public concern over the project.

16 Q. How would the original proposal (connecting the Archer 41 and Pukele #2
17 overhead circuits at the Date and Pumehana Streets intersection) have changed the
18 operation of the existing Archer 41 46kV overhead circuit along Pumehana
19 Street?

20 A. By connecting the Archer 41 and Pukele #2 overhead circuits at the Date and
21 Pumehana Streets intersection, the existing Archer 41 46kV overhead circuit
22 along Pumehana Street from Lime Street to Date Street would have been used on
23 a daily basis. Under normal conditions, it is estimated that approximately 400
24 amperes of electrical current would have been flowing through the existing Archer
25 41 46kV overhead circuit along Pumehana Street on a daily basis.

1 Q. What are the disadvantages associated with Change #2?

2 A. The only disadvantage associated with Change #2 is that approximately 590 feet
3 more of ductline construction is required as compared to the original proposal.
4 Therefore, Change #2 will require more trenching and consequently cost more
5 than the original proposal. However, when compared to the total project cost and
6 considering the advantages gained, the cost increase for Change #2 is relatively
7 small. Ms. Oshiro's testimony, HECO ST-9, discusses the cost impacts of Change
8 #2.

9 Q. Why is Change #2 now being proposed?

10 A. Given the public concern expressed regarding potential impacts of the proposed
11 new lines, particularly in the immediate vicinity of Lunalilo Elementary School,
12 Change #2 was identified. Change #2 maintains the current operating condition
13 (essentially zero electrical current flow) in the existing Archer 41 46kV overhead
14 circuit along Pumehana Street, adjacent to Lunalilo Elementary School. At the
15 same time, Change #2 connects the Archer 46 46kV circuit with the Pukele 2
16 circuit, which fulfills an objective of the original proposal for Phase 1.

17

18 CITY'S DIRECTIVE REGARDING REPAVING

19 Q. Please describe the City's directive.

20 A. The City's directive is to require utility companies to repave a City street curb-to-
21 curb after it has been trenched. Currently, City ordinance, Section 14-17.3(e),
22 only requires the trenched area of the street to be repaved.

23 Q. Please briefly describe how this directive was issued and where this directive
24 currently stands.

25 A. A memo dated January 27, 2004 (see HECO-ST-203), from the City Managing

1 Director, with the concurrence of the Mayor, was issued to various City Directors.
2 Since the issuance of the memo, this directive has been imposed on two other
3 HECO projects.

4 In the first project, Makalapa-Kuahua/Makalapa-Puuloa fiber optic line
5 installations, construction drawings were submitted for City approval in 2003,
6 before the directive was initiated. The City recently returned these drawings to
7 HECO for revisions because the drawings did not reflect the directive of curb-to-
8 curb repaving.

9 In the second project, distribution lines related to the Hokua Development,
10 the City staff advised HECO that construction drawings should reflect curb-to-
11 curb repaving before being submitted for City approval.

12 On June 8, 2004, a task force was convened, consisting of City and utility
13 personnel, to discuss this directive. The task force was convened because of
14 concerns that the City's directive is excessive and goes beyond what is required
15 by City ordinance, Section 14-17.3(e). The task force intends to recommend
16 changes to the directive for the Managing Director and Mayor's consideration.
17 However, no timetable has been set on when this will occur.

18 Q. What has HECO done in regards to the City's directive?

19 A. HECO has and will continue to actively participate on the task force to
20 recommend changes to the directive. Until changes to the directive are adopted,
21 construction drawings for projects that need City approval will reflect the curb-to-
22 curb requirements with a clause. The clause would say that at the time of
23 construction HECO reserves the right to construct the proposed ductline based on
24 any new directive issued since the drawings were approved. While HECO
25 opposes the directive, HECO will comply with the directive to avoid delaying

1 projects.

2 Q. What phases of the 46kV Phased Project does the City's current directive impact
3 if it is implemented?

4 A. The City's directive, if implemented, would impact both Phases 1 and 2 of the
5 46kV Phased Project. Both Phases 1 and 2 involve the installation of new
6 underground ductlines in City streets.

7 Q. What would be the impact on Phase 1 of the 46kV Phased Project if the current
8 directive were enforced?

9 A. The proposed streets for routing the Phase 1 ductlines would be repaved curb-to-
10 curb if the directive were enforced. These streets include Makaloa Street, Lime
11 Street, Pumehana Street, Date Street, Winam Avenue, and Mooheau Avenue.

12 Q. What would be the potential schedule and cost impacts on Phase 1 if the current
13 directive were enforced?

14 A. As discussed by Mr. Harrington in HECO ST-8, there would be no significant
15 change to the overall construction schedule of Phase 1 if the City's directive were
16 implemented. However, as discussed by Ms. Oshiro in HECO ST-9, there would
17 be a cost increase to Phase 1.

18 Q. What would be the impact on Phase 2 of the 46kV Phased Project if the current
19 directive were enforced?

20 A. The proposed streets for routing the Phase 2 ductlines would be repaved curb-to-
21 curb if the current directive were enforced. These streets include Cooke Street,
22 King Street, and McCully Street.

23 Q. What would be the potential schedule and cost impacts on Phase 2 if the current
24 directive were enforced?

25 A. As discussed by Mr. Harrington in HECO ST-8, there would be no significant

1 change to the overall construction schedule of Phase 2 if the City's directive were
2 implemented. However, as discussed by Ms. Oshiro in HECO ST-9, there would
3 be a cost increase to Phase 2.

4
5 SUMMARY

6 Q. Please summarize your testimony?

7 A. The system is already at risk for a major power outage and that risk will only
8 increase in time. The reality of this risk was heightened with the loss of the
9 Pukele Substation on the morning of March 3, 2004. Change #1 and Change #2
10 would enhance the timely implementation of Phase 1 of the 46kV Phased Project
11 by reducing the potential for project delays. Furthermore, the implementation of
12 these changes would provide the same level of effectiveness in addressing the
13 transmission problems as the original proposal in the Application filed on
14 December 18, 2003. Finally, the net effect of implementing these changes would
15 be beneficial in terms of potential impacts such as traffic, cost, and schedule.
16 Therefore, it is recommended that these changes be accepted and incorporated as
17 part of this project.

18 The City has issued a directive requiring utilities to repave City streets curb-
19 to-curb after trenching. Because the directive is excessive and goes beyond what
20 is required by City ordinance, a task force has been formed consisting of
21 representatives from the City, HECO and other utilities. The task force will
22 recommend changes to the directive for the Managing Director and Mayor's
23 consideration. If the directive were enforced in its current form, the 46kV Phased
24 Project would experience a cost increase.

25 Q. Does this conclude your testimony?

1 A. Yes, it does.
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