Ready to Ride

Ralph McKinney
Bob Good
Steve Stowe
Patrick Preusser

January 30, 2020
Ready to Ride

Safety Certification

- System Integration Testing
- Pre-Revenue Operations
- Management Capacity & Capability
FTA OP54 – Readiness for Service

System Integration Testing

Safety Certification

Pre-Revenue Operations

Management Capacity & Capability

Ready to Ride
## Readiness Timeline

<table>
<thead>
<tr>
<th>Project Development</th>
<th>Engineering</th>
<th>Construction</th>
<th>Pre-Revenue Operations</th>
<th>Revenue Service</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Safety Certification</td>
<td></td>
</tr>
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<td>System Integration Testing</td>
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<td>Pre-Revenue Operations</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Management Capacity &amp; Capability</td>
<td></td>
</tr>
</tbody>
</table>
Safety Certification Requirements

Federal Transit Administration

49 CFR Part 633 - Project Management Oversight

• OP54 Readiness for Revenue Operations

• OP22 Safety and Security Management Review

• FTA Circular 5800.1- Safety and Security Management Guidance for Major Capital Projects (August 2007)

49 CFR Part 674 – Rail Fixed Guideway Systems; State Safety Oversight
Safety Certification

SEGMENT 1 REVENUE SERVICE

85.0%

LEGEND
GREEN COMPLETE
BLUE REMAINING

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# Safety Certification Details

<table>
<thead>
<tr>
<th>Segment 1 Certification Status - Progress</th>
<th>Total Items</th>
<th>Total Verified Jan/19</th>
<th>Total Verified Dec/19</th>
<th>Total Remaining</th>
<th>Δ YTD</th>
<th>% Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSF (Civil &amp; Systems)</td>
<td>740</td>
<td>713</td>
<td>725</td>
<td>15</td>
<td>12</td>
<td>98%</td>
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<tr>
<td>Guideway (Civil &amp; Systems)</td>
<td>7,368</td>
<td>7,368</td>
<td>7,368</td>
<td>0</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>Stations &amp; Parking (Civil &amp; Systems)</td>
<td>7,114</td>
<td>5,075</td>
<td>6,884</td>
<td>230</td>
<td>1,809</td>
<td>97%</td>
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<tr>
<td>Passenger Train (PT 8-13) including Fleet Wide Requirements</td>
<td>1,400</td>
<td>302</td>
<td>519</td>
<td>881</td>
<td>217</td>
<td>37%</td>
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<tr>
<td>MOW Vehicles</td>
<td>458</td>
<td>381</td>
<td>454</td>
<td>4</td>
<td>73</td>
<td>99%</td>
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<tr>
<td>Traction Electrification System (TES)</td>
<td>286</td>
<td>173</td>
<td>204</td>
<td>82</td>
<td>31</td>
<td>71%</td>
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<tr>
<td>Automatic Train Control (ATC)</td>
<td>346</td>
<td>301</td>
<td>301</td>
<td>45</td>
<td>0</td>
<td>87%</td>
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<tr>
<td>Supervisory Control and Data Acquisition (SCADA)</td>
<td>84</td>
<td>56</td>
<td>56</td>
<td>28</td>
<td>0</td>
<td>67%</td>
</tr>
<tr>
<td>Communication</td>
<td>983</td>
<td>676</td>
<td>676</td>
<td>307</td>
<td>0</td>
<td>69%</td>
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<tr>
<td>System Integration Testing (SIT)</td>
<td>138</td>
<td>68</td>
<td>71</td>
<td>67</td>
<td>3</td>
<td>51%</td>
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<tr>
<td>Platform Screen Gate System (PSGS)</td>
<td>96</td>
<td>57</td>
<td>66</td>
<td>30</td>
<td>9</td>
<td>69%</td>
</tr>
<tr>
<td>Elevators / Escalators</td>
<td>508</td>
<td>71</td>
<td>295</td>
<td>213</td>
<td>224</td>
<td>58%</td>
</tr>
<tr>
<td>Fare Collection System</td>
<td>78</td>
<td>28</td>
<td>28</td>
<td>50</td>
<td>0</td>
<td>36%</td>
</tr>
<tr>
<td>Art in Transit</td>
<td>168</td>
<td>0</td>
<td>14</td>
<td>154</td>
<td>14</td>
<td>8%</td>
</tr>
<tr>
<td>Operational Readiness</td>
<td>756</td>
<td>121</td>
<td>123</td>
<td>633</td>
<td>2</td>
<td>16%</td>
</tr>
<tr>
<td>Risk Management (PHA, TVA, Open Items)</td>
<td>3,157</td>
<td>817</td>
<td>2,311</td>
<td>846</td>
<td>1,494</td>
<td>73%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23,680</strong></td>
<td><strong>16,207</strong></td>
<td><strong>20,095</strong></td>
<td><strong>3,585</strong></td>
<td><strong>3,888</strong></td>
<td><strong>85%</strong></td>
</tr>
</tbody>
</table>
System Integration Testing

KEY INDICATORS FOR 2020 INTERIM OPENING 1
CORE SYSTEMS TESTING AND COMMISSIONING (T&C)

SEGMENT 1 - TESTING AND COMMISSIONING

**LEGEND**
- COMPLETE
- REMAINING
- IN PROGRESS
- LATE
- EARLY

- **Jan 2020**: Energization of 3rd Rail to PPL
- **Mar 2020**: Energization of 3rd Rail to ALH
- **May 2020**: Start of Train Testing to ALH
- **June 2020**: Start of Trial Running
- **Aug 2020**: Completion of Trial Running
- **Oct 2020**: Energization of 5th Rail to ALH
- **Feb 2020**: Start of Train Testing to EKP
- **Apr 2020**: Start of Trial Running
- **Nov 2020**: Energization of 4th Rail to ALH
- **31 Dec 2020**: Interim Opening #1
The monthly goals are derived to achieve the overall project goal of Interim Opening #1 in December 2020. HRH’s input and commitment is essential to achieve this goal.

Monthly goals are to be strictly adhered to, otherwise the Interim Opening #1 goal will be jeopardized.

If any of the monthly goals are missed, an immediate remedy will need to be applied to get the project schedule back on track.

Further coordination is underway to mitigate the schedule to make weekend service in October/November 2020.
## Monthly Goals Q1

<table>
<thead>
<tr>
<th>Jan 2020</th>
<th>Feb 2020</th>
<th>Mar 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Start of Train Testing to EKP (CTP/VTP/STP)</td>
<td>• Completion of MDS network in Functional Section (HOP to LCC)</td>
<td>• Completion of MDS network to EKP</td>
</tr>
<tr>
<td>• Energization of 3rd Rail to EKP</td>
<td>• Energization of 3rd Rail to PRL (LCC GBS + PHL TPSS)</td>
<td>• Energization of 3rd Rail to ALH (PRL TPSS + ALH TPSS)</td>
</tr>
<tr>
<td>• Completion of SLAN network to EKP TPSS</td>
<td>• Completion of SLAN network to LCC GBS and PHL TPSS</td>
<td>• Completion of SLAN network to PRL TPSS and ALH TPSS</td>
</tr>
<tr>
<td>• Completion of WYL+WLO+HOP+EKP SCADA TPSS</td>
<td>• Completion of LCC + PHL SCADA TPSS</td>
<td>• Completion of PRL + ALH SCADA TPSS</td>
</tr>
<tr>
<td>• Completion of WLO PSGS Testing</td>
<td>• Completion of PHL ATC WTP</td>
<td>• Completion of PRL/ALH ATC WTP</td>
</tr>
<tr>
<td>• Completion of WYL/LCC PSGS testing</td>
<td>• Completion of WYL/LCC PSGS testing</td>
<td>• Completion of EKP/UHWO PSGS testing</td>
</tr>
<tr>
<td>• Train #12 Interim Certified for Dynamic Testing &amp; Dynamic Test Completed</td>
<td>• Train #12 Completion of onboard ATC and onboard COM</td>
<td>• Train #10 Completion of onboard ATC and onboard COM</td>
</tr>
<tr>
<td>• Train #1 &amp; #3 Completion of Qualification Test</td>
<td>• Train # 10 Interim Certified for Dynamic Testing &amp; Dynamic Test Completed</td>
<td>• Train # 11 Interim Certified for Dynamic Testing &amp; Dynamic Test Completed</td>
</tr>
<tr>
<td>• Completion of HOP FDAS</td>
<td>• Completion of EKP FDAS</td>
<td>• Completion of WLO FDAS</td>
</tr>
<tr>
<td>• Completion of COMM CCTV/PIS/ACS-IDS at HOP</td>
<td>• Completion of COMM CCTV/PIS/ACS-IDS at HOP</td>
<td>• Completion of COMM CCTV/PIS/ACS-IDS at WLO/WYL</td>
</tr>
<tr>
<td></td>
<td>• Completion of COMM at MSF</td>
<td></td>
</tr>
</tbody>
</table>
## Monthly Goals Q2

<table>
<thead>
<tr>
<th>Apr 2020</th>
<th>May 2020</th>
<th>Jun 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Start of Train Testing to ALH (CTP/VTP/STP)</td>
<td>• Completion of System Integration Testing in the Functional Section</td>
<td>• Start of System Integration Testing for all 9 stations on the west side</td>
</tr>
<tr>
<td>• Start of System Integration Testing in the Functional Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Completion of MDS network to ALH station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Completion of ALH UPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Completion of ALH PSGS</td>
<td></td>
</tr>
<tr>
<td>• Completion of PHL/PRL PSGS</td>
<td>• Completion of ALH PSGS</td>
<td></td>
</tr>
<tr>
<td>• Train #11 Completion of onboard ATC and onboard COM</td>
<td>• Train #9 Completion of onboard ATC and onboard COM</td>
<td>• Train #8 Completion of onboard ATC and onboard COM</td>
</tr>
<tr>
<td>• Train # 9 Interim Certified for Dynamic Testing &amp; Dynamic Test Completed</td>
<td>• Train #8 Interim Certified for Dynamic Testing &amp; Dynamic Test Completed (4 Revenue Service Ready train with all re-work complete)</td>
<td>• Train # 13 Interim Certified for Dynamic Testing &amp; Dynamic Test Completed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Completion of WYL/LCC FDAS</td>
<td>• Completion of UHWO/PHL FDAS</td>
<td>• Completion of PRL/ALH FDAS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Completion of COMM CCTV/PIS/ACS-IDS at LCC/EKP</td>
<td>• Completion of COMM CCTV/PIS/ACS-IDS at UHWO/PHL</td>
<td>• Completion of COMM CCTV/PIS/ACS-IDS at PRL/ALH</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Completion of Station SCADA LCC/EKP</td>
<td>• Completion of Station SCADA UHWO/PHL</td>
<td>• Completion of Station SCADA PRL/ALH</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Monthly Goals Q3

<table>
<thead>
<tr>
<th>Jul 2020</th>
<th>Aug 2020</th>
<th>Sept 2020</th>
</tr>
</thead>
</table>
| • Start of TPSS Capability Test  
  • Completion of System Integration Test | • Start of Trial Running | • All Operational & Emergency Scenarios for Trial Run Completed |
| • UPS integration test at stations (EKP to ALH) | | |
| • FDAS integration test at stations (EKP to ALH) | | |
| • COM integration test at stations (EKP to ALH) | | |
| • Train #13 Completion of onboard ATC and onboard COM | | |
## Monthly Goals Q4

<table>
<thead>
<tr>
<th>Oct 2020</th>
<th>Nov 2020</th>
<th>Dec 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>• End of Trial Running period and availability</td>
<td>• Handover to DTS</td>
<td>• Interim Opening #1</td>
</tr>
</tbody>
</table>
Pre-Revenue Operations

SEGMENT 1 REVENUE SERVICE

-operative dev

 ✓ 149 OPS
 ✓ 40 HSQE
 ✓ MMIS Design Document
 ✓ Asset Management*
 ✓ Maintenance Plan*

-maintenance dev

 ✓ 80 Training Plans
 ✓ 59 Courses
 ✓ Rule Book*

-training dev

 ✓ 47 of 178 hired
 ✓ 1,620 hours
 ✓ 92,673 total hours
 ✓ Trial Run Program Plan*
 ✓ 3 of 77 Test Cases*

-administrative dev

 ✓ Hiring
 ✓ Training
 ✓ Validation

Legend:
- Green: Complete
- Blue: Remaining
- In Progress
- Red: Late
- Purple: Early

* Drafted
• HRH has contracted Horizons Partners, experienced O&M and start-up professionals with up to 30 FTE consultants

• Head of Operations & Maintenance – Americas on-site for up to 2 months

• 20 page, 600 activity mobilization schedule
Pre-Revenue Operations Progress

• HRH has appointed a Senior O&M Contract Board to oversee the mobilization. The O&M CB will ensure resources are provided to the O&M Director

• Introduced candidate for O&M Director

• Identified candidate for Operations Director

• Mobilization Plan and Schedule approved (ANR)

• MMIS Functional Design Document, Cloud Infrastructure Specifications, & Master Data Definition submitted for OTS
  • Next Steps: 1) Workshops in February 2) Ongoing PM prototyping

• O&M Management and Staffing Plan and Rule Book drafted
Pre-Revenue Operations Milestones

2020 Q1
- Start of detailed Trial Run Planning
- Commence Mass Recruitment
- Start workshops for MMIS SPRINT module development
- Start of Asset management and Maintenance planning

2020 Q2
- Start of formal training program
- Start of MMIS Data Input
- Commence hazard transfer process

2020 Q3
- Pilot handover station activities
- Start of Trial Running and System Demonstration
Hired
✓ Information Specialist II – July 2019
✓ Chief Safety and Security Officer – October 2019
✓ Rail Operations Launch Manager – November 2019
✓ Director of Rapid Transit – December 2019
✓ Parking Controls Developer/Manager – February 2020

Phased Recruitment & Staffing Continues
Key positions such as...
- Senior Operations & Maintenance Manager
- Technical Compliance Officers
- Systems Engineer
- Communications Systems Manager
DTS Safety & Security Plans

DTS Chief Safety and Security Officer leading coordination efforts


DTS continues to collaborate with HRH and other key stakeholders to advance project deliverables
DTS developing a Transit Management Capacity and Capability Plan (TMCCP) to demonstrate capacity and capability to oversee O&M

- Organization, Personnel Qualification, and Experience
- Approach, Understanding, and Ability to Perform the Work

DTS working with HART to review HRH O&M documents

DTS meeting with HART, HRH, and HDOT on a regular basis to participate in testing and start-up activities in preparation for trial running and ultimately revenue service
DTS OP54 Status

SEGMENT 1 REVENUE SERVICE

- **TRANSIT AGENCY RAIL SAFETY PLAN (TARSP)**
  - 25% Complete
  - 75% Remaining

- **SYSTEM SECURITY PLAN (SSP)**
  - 50% Complete
  - 50% Remaining

- **CCH COMPREHENSIVE EMERGENCY MANAGEMENT PLAN (EMP)**
  - 75% Complete
  - 25% Remaining

- **TRANSIT ASSET MANAGEMENT PLAN (TAMP)**
  - 100% Complete

- **FARE COLLECTION PLAN**
  - 75% Complete
  - 25% Remaining

- **BUS FLEET MANAGEMENT PLAN (BFMP)**
  - 75% Complete
  - 25% Remaining

- **RAIL FLEET MANAGEMENT PLAN (RFMP)**
  - 75% Complete
  - 25% Remaining

- **TRANSIT MANAGEMENT CAPACITY AND CAPABILITY PLAN**
  - 50% Complete
  - 50% Remaining

**LEGEND**
- **COMPLETE**
- **REMAINING**
HRH DBOM Contract Updates:
✓ Additional staffing (trains & stations), service hours, and increased frequency
✓ O&M impacts of DB related changes agreed
✓ 99.5% System Service Availability
✓ Cleaning/janitorial of park-and-ride facilities
✓ Scope of Work and major technical items agreed
✓ Tentative agreement DBOM Amendment 2 & P3 pricing

Next Steps:
✓ Final agreement DBOM Amendment 2 & P3 pricing
✓ Completion of Amendment and Supplemental Agreement (ASA)
Budget request submitted to BFS in October 2019

Assumes P3 is successful

Incorporates updated HRH cost estimate and approved staffing plan

Includes funding request to support short-term maintenance, cleaning, graffiti removal, etc.

Includes improved bus service to rail stations timed with start of rail operations
DTS Parking at Stations

DTS working with HART to ensure parking is available at stations

1,240 parking spaces for Interim Opening 1 in 2020:
✓ UHWO station – 300 interim spaces
✓ Ho’opili station – 340 interim spaces with potential for expansion
✓ Aloha Stadium station – 600 permanent spaces

FY21 funds requested to install access control at Station parking facilities:
✓ HOLO card required for entry and exit
✓ Greater security, easier to limit usage to transit patrons
✓ Could potentially charge a fee for parking in future

4,100 total parking spaces by 2025 or earlier:
✓ East Kapolei – 900 permanent spaces
✓ UHWO – 1,000 permanent spaces
✓ Pearl Highlands – 1,600 permanent spaces
FY21 funds requested to provide bus service to rail stations during Interim Opening 1

Almost all rail stations will have bus access, either directly at the station or nearby

In some cases, bus routes that already pass near rail stations will simply be modified

As more rail stations open, bus service will be improved to provide feeder access to the stations.
DTS Proposed Kapolei-Makakilo Bus Routes

Affected Existing Routes
- Route 40 Makaha to Ala Moana
- Route 411 Makakilo to Kapolei Transit
- Route 413 Campbell Industrial rk
- Route C Makaha to Ala Moana

Unaffected Existing Routes
(Not all routes shown on map)
- Regular routes: 41, 411, 414, 415, 416
- Express routes: 92, 93, 94, 102,

Proposed Routes - Interim Rail Opening 2020
- Route 40 Extend to UHWO Park & Ride
- Route 411 Extend to UHWO Park & Ride
- Route 413 Extend to UHWO Park & Ride
- Route C
- Additional Service Area

Rail Line
- Interim Opening Phase 1
- Rail Stations

NEW Frequent all-day service on Kualakai Pkwy and Kapolei Pkwy.
DTS Proposed Waipahu-Pearl City-Aiea Bus Routes

Proposed Waipahu Routes
Interim Rail Opening 2020
- Route A: End at Aloha Stadium, extend to the Airport.
- Route 43: Extend to West Loch Station
- Route 432: Extend to West Loch Station, follow Route 43, extend to LCC
- Route 434: End at West Loch Station

Rail Line
- Interim Opening Phase 1
- Interim Opening Phase 2
- Rail Stations

Other
- Additional Service

Proposed Pearl City Routes
Interim Rail Opening 2020
- Route 73: LCC to Lehua peninsula via new service to Pearl City Gateway Center. Weekend service.
- Route 73: Pearl City Gateway Center to Aloha Stadium Station. Weekend service.
- Route 53: Extend to Apapa St 1 & Ahuahu St.

Proposed Pearl City & Aiea Routes
Interim Rail Opening 2020
- Route 54: Extend 54 Upper to Newtown
- Route 71: Discontinue Newtown service to provide two-way service along Kaahel St. Weekend Service.
- Route 74: Weekend Service.
- Route R: New express service direct to Downtown from the end of the rail line at Aloha Stadium.

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