ACEC/MA
Annual State Markets
2019

John Audi, PhD.
Assistant Director
PROGRAM STRUCTURE

- **Complete**
  - All Work Complete
  - All payments made

- **Ongoing**
  - At least one commitment executed

- **Proposed**
  - Funding Allocated
  - No external commitments executed

- **Private**
  - To be completed by outside party
  - Development agreement executed

- **Contingent on Funding Source**
  - Awaiting external funds or new revenue

- **Unfunded**
  - Project backlog
PROGRAM EVALUATION

- Project Evaluation Criteria
  - Safety and Security
  - Asset Maintenance
  - Operational Efficiencies
  - System Enhancement/ Customer Service
  - HOV/Ground Access Improvements
  - Commitment to Surrounding Communities

- Financial Evaluation Criteria
  - Grants and Outside Funding
  - PFC Eligibility
  - Cost Recovery
  - Rates and Charges Impact
  - Credit Rating Impact

- Complement and Support Strategic Plan
### FY19 – FY23 CAPITAL PROGRAM

#### FY19-FY23 Total: $2,573,501

<table>
<thead>
<tr>
<th></th>
<th>As of FY18</th>
<th>FY19</th>
<th>FY20</th>
<th>FY21</th>
<th>FY22</th>
<th>FY23</th>
<th>FY19-23</th>
<th>FY24+</th>
<th>Total Cost</th>
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<tbody>
<tr>
<td>Grand Total</td>
<td>$751,580</td>
<td>$585,166</td>
<td>$569,344</td>
<td>$732,644</td>
<td>$369,785</td>
<td>$316,562</td>
<td>$2,573,501</td>
<td>$1,725,855</td>
<td>$5,050,936</td>
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</table>

- Contingent on Funding Source (CFS): $349M
- Unfunded: $2,434M
- Total CFS & Unfunded: $2,783M

FY18-FY22 Total: $2,429,688
An Increase of 6%
### Capital Program FY19-23

#### Capital Program by Facility

<table>
<thead>
<tr>
<th>Project</th>
<th>FY19-23</th>
<th>Current Program %</th>
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</thead>
<tbody>
<tr>
<td>Logan Airport Total</td>
<td>$1,933,464</td>
<td>75.13%</td>
</tr>
<tr>
<td>Hanscom Airport Total</td>
<td>$52,095</td>
<td>2.02%</td>
</tr>
<tr>
<td>Worcester Airport Total</td>
<td>$43,267</td>
<td>1.68%</td>
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<tr>
<td>Maritime Total</td>
<td>$405,654</td>
<td>15.76%</td>
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<tr>
<td>Real Estate Total</td>
<td>$27,425</td>
<td>1.07%</td>
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<tr>
<td>Agency-Wide Total</td>
<td>$111,596</td>
<td>4.34%</td>
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<tr>
<td><strong>Grand Total</strong></td>
<td><strong>$2,573,501</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

#### Capital Program FY19-23: Pie Chart

- **Logan Airport**: 75%
- **Hanscom Airport**: 2%
- **Worcester Airport**: 2%
- **Maritime**: 16%
- **Real Estate**: 1%
- **Agency Wide**: 4%

---

Diagram: Capital Program FY19-23
## PROPOSED FY19 – FY23 CAPITAL PROGRAM

<table>
<thead>
<tr>
<th>Element</th>
<th>Value</th>
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<tbody>
<tr>
<td>Total Projects</td>
<td>336</td>
</tr>
<tr>
<td>Total Program</td>
<td>$2,574M</td>
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<tr>
<td>Private Funds</td>
<td>$1,837M</td>
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<tr>
<td>Total and Private Funds</td>
<td>$4,411M</td>
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<tr>
<td>Contingent on Funding Source (CFS)</td>
<td>$349M</td>
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<tr>
<td>Unfunded</td>
<td>$2,434M</td>
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</table>
CAPITAL INVESTMENTS BY YEAR

FY19 FY20 FY21 FY22 FY23

Capital Program Private Investments

$0 $200,000,000 $400,000,000 $600,000,000 $800,000,000 $1,000,000,000 $1,200,000,000 $1,400,000,000
Estimated Job Creation (FTEs): **Total 45,762**

- **FY19**: 12,686 FTEs
  - Private: 6,125
  - Indirect/Induced: 5,561
  - Direct: 1,000

- **FY20**: 10,860 FTEs
  - Private: 3,345
  - Indirect/Induced: 7,491
  - Direct: 724

- **FY21**: 12,746 FTEs
  - Private: 6,125
  - Indirect/Induced: 5,561
  - Direct: 1,060

- **FY22**: 6,125 FTEs
  - Private: 3,345
  - Indirect/Induced: 2,780
  - Direct: 95

- **FY23**: 3,345 FTEs
  - Private: 1,000
  - Indirect/Induced: 1,345
  - Direct: 1,000
Capital Program FY19-23

Aviation

Logan
- Airside
  - State of Good Repair: $121,095 (46%)
  - Growth: $99,501
  - Improvement: $42,381
- Landside
  - State of Good Repair: $353,481 (22%)
  - Growth: $1,017,971
  - Improvement: $261,341
- Mitigation
  - State of Good Repair: $1,000
  - Growth: $1,697
  - Improvement: $34,996

Hanscom
- State of Good Repair: $38,606 (74%)
- Growth: $11,119
- Improvement: $2,370

Worcester
- State of Good Repair: $31,686 (73%)
- Growth: $5,875
- Improvement: $5,707
Capital Program FY19-23

Maritime

Conley
- State of Good Repair: $50,915 (16%)
- Growth: $240,655
- Improvement: $20,998

Cruise
- State of Good Repair: $22,579 (62%)
- Growth: $12,000
- Improvement: $1,533

Other
- State of Good Repair: $7,487 (13%)
- Growth: $46,756
- Improvement: $2,730
LOGAN AIRSIDE PROGRAM

Logan Airside

**Airside Strategic Initiatives**
- Equipment Storage Maintenance Facility $50M
- Fuel Tank, Re-fueler Filter & Building 6a Demo $31.5M
- Second Airfield Lighting Vault $8M

**State of Good Repair**
- Runway 9-27 Rehab $19M
- In-Ground Snow Melter Replacement $9.5M
- Portable Snow Melters $8M
- Taxiway C3 Pavement Rehab and New Bypass Taxiway $7M
LOGAN LANDSIDE PROGRAM

Strategic Initiatives

On-Campus

- Terminal E Phase I&II Modernization (Partial Funding) $518M
- Terminal C Optimization & B to C Connector $193M
- Terminal B to C Roadway Improvements $189M
- Logan Airport Parking Program (2000 Spaces) $120M
- Terminal C Canopy and Upper Deck $65M
- Automated People Mover (Programming and Study) $25M
- Strategic Projects Electrical Demand $17M
- Old Tower Tenants Relocations $15M

Off-Campus

- HOV Initiatives $50M
- Silver Line Buses $25M
- Logan Express Upgrade $3M

State of Good Repair

- Central Heating Plant Upgrades $50M
- HVAC Equipment Replacement $30M
- South Cargo Building 57, 58, and 62 HVAC Equipment Upgrade $16M
- Roof Replacement Phase II $15M
- Terminal B Sanitary Main Pipe Replacement $14M
- Terminal B Pier A Ceiling Renovations $5M
TERMINAL E MODERNIZATION

**Project:** Terminal E Modernization (Logan International Airport)  
**Construction Start:** April 2019  
**Project Completion:** March 2022 (Temporary Certificate of Occupancy for first [4] gates) - Phase 1

- Renovated Ticketing Hall | Additional Ticket Counters & Kiosks  
- Additional Vertical Circulation for Domestic and Pre-Cleared Flights  
- New Larger Checkpoint with faster Automated Screening Lanes (ASL)  
- Great Space and 7 New Departure Lounges  
- Additional Concessions and Airline Clubs  
- Flex Gates to Accommodate Fleet Mix plus Flexibility for Domestic Flights  
- 12 New Passenger Boarding Bridges  
- Reconfigured CBP | INS with Facial Recognition  
- 2 Additional International Bag Claim Devices  
- Additional Outbound and Inbound Baggage Handling Devices  
- Domestic and Precleared Bag Claim Devices  
- Enhanced Re-Check Operations  
- Additional Curb Capacity for both Departing and Arriving Flights
TERMINAL E PHASE 1
2016

TERMINAL E PHASE 2
2023

EXISTING TERMINAL E

TERMINAL E MODERNIZATION
LOGAN AIRPORT PARKING PROGRAM

Project: Logan Airport Parking Program
Terminal E Garage Construction Start: Fall 2019
Terminal E Garage Construction Completion: March 2022

• 2,000 new parking spaces at Terminal E
• 3,000 new parking spaces at Economy Garage
• Design & Construction for Terminal E Garage only at this time
• MEPA Permitting for both Terminal E Garage and Economy Garage
TERMINAL B-C ROADWAYS – Project Scope, Goals and Issues

Project: Terminal B-C Roadways

Construction Start: Fall 2018

Construction Completion: Fall 2022

Project Scope

• Replace the 1960’s vintage section of Departures Roadway located from Terminal B to Terminal C

• Reconfigure Arrivals Roadway

Project Goals

• Improve traffic conditions from Terminals B to C

• Eliminate costly and disruptive maintenance repairs of aging viaduct

• Support projected JetBlue flight growth and airline relocation projects

Issues The Project Is Addressing

• Substandard weave condition for traffic exiting Terminal B with traffic entering Terminal C

• Condition exists at both Arrivals and Departures Levels

• Contributes to extensive traffic back-ups at peak hours of operation

• Eliminates capacity to handle queuing back-ups from Terminal C curbside

Arrivals

Departures
TERMINAL B-C ROADWAYS – Proposed Images of Final Build Construction
**TERMINAL C CANOPY AND UPPER DECK**

**Project:** Terminal C Canopy and Upper Deck  
(Logan International Airport)

**Construction Start:** March 2019  
**Project Completion:** September 2021

**Project Goals**

- Expand footprint of Departures Deck to gain more area for increased curb length and travel lanes
- New canopy to allow more daylight and more visibility of Terminal
- Improve views of Terminal from Roadway and Overhead Walkway
- Expand canopy footprint to cover departures curbside
- Provide permanent elevators to improve passenger movement capacity to and from Terminal
Rooftop Photovoltaic System

- Currently pursuing third party funding for 165kWhr system.
- Sized to power all new arrivals and departures roadways level lighting with small energy surplus.
- Panels would be highly-visible to passengers on the existing pedestrian bridge as a demonstration of Massport’s commitment to renewable energy.
TERMINAL C-B OPTIMIZATION + CONNECTOR

**Project:** Terminal C-B Optimization + Connector  
(Logan International Airport)

**Construction Start:** October 2019  
**Project Completion:** Fall 2021 (Certificate of Occupancy)

- New post-security concourse connection between Terminals B and C
- Expanded concessions and passenger amenities along new concourse
- 1 new gate, 4 existing gates renovated and expanded, three of which to receive new facial recognition boarding systems
- New centralized vertical circulation + passenger exit
- Demolition of Old Tower and Tower bridge structure to accommodate new roadways and new Massport offices to replace those currently in Old Tower
- New level 4 airline club core/shell
- Expanded restrooms and concessions at Terminal C, Pier B to support new gate
TERMINAL C-B OPTIMIZATION + CONNECTOR
HANSCOM AND WORCESTER PROGRAMS

**Strategic Initiatives**
- ARFF & CBP Facility: $11M
- Replace Old T Hangars: Rows A, B, C: $4M
- Salt Storage Enclosure: $1.2M

**State of Good Repair**
- Fire Protection Infrastructure: $7.8M
- Rehab Runway 5-23: $5M
- Rehab Taxiway R: $3.7M
- Electrical Infrastructure: $3M
- East Ramp Joint Repair: $2.5M
- Civil Air Terminal Drainage Improvements: $1.7M

**Worcester Airport**

**Strategic Initiatives**
- Two Additional Jet Bridges: $2.2M
- Electrical Upgrades for Added Capacity: $1M

**State of Good Repair**
- Runway 11 and 29 EMAS Replacement: $5M
- Runway 11 Rehab: $4.3M
- Reconstruct T/W B Between T/W F and R/W 15: $2.8M
- Rehab East Taxi Lane and Transient Ramp: $2.2M
- Worcester Drainage Study and Improvements: $1.2M
MARITIME PROGRAMS

### Maritime Cruise Terminal

**Strategic Initiatives**
- Cruise Terminal Reno & Enhancement (Partial funding) **$10M**
- New Automatic Gangway **$4M**
- Additional Seating at Black Falcon **$2M**
- Cruise Terminal Ground Transportation Area 1 **$200K**

**State of Good Repair**
- Cruise Terminal Window Replacement **$6M**
- Cruise Terminal Seawall Structural Rehab **$3.4M**

### Maritime Conley Terminal

**Strategic Initiatives**
- New Berth 10 & Cranes at Coastal **$210M**
- Berths 14-17 Backland Area Reconstruction (Fastlane) **$17M**
- New Conley In-Gate & Out-Gate Facilities (Fastlane) **$17M**
- New RTG’s **$8M**
- Refrigerated Container Storage (Fastlane) **$7.5M**
- New Container Yard at Coastal **$6M**

**State of Good Repair**
- Berth 11 & 12 Rehab (FastLane) **$19M**
- Crane Painting Program (Fastlane) **$3.9M**
EXISTING CONLEY CONTAINER TERMINAL

- Harbor Dredging ($350M)
- New Berth 10 and 3 New Cranes ($215M project with $107.5M from Economic Development Bill)
- Dedicated Freight Corridor ($75M)
- Existing Terminal ($103M project with $42M from FASTLANE Grant)
CONLEY TERMINAL NEW BERTH 10

Project: Conley Terminal New Berth 10
Construction Start: July, 2018
Project Completion: December, 2020

- New 1,278 foot long berth, 108 feet wide
  - 900 steel pipe piles supporting new concrete deck,
  - 1,350 lf of sheet pile wall,
  - Soil stabilization for oil impacted soils behind sheet pile wall,
  - Improvements to Lobstermen Cove Facilities,
  - New utilities and electrical infrastructure to support new cranes.

- Dredging to -50 MLLW – 336,100cy of dredging & rock removal
- Three new ship-to-shore cranes
**IMPROVEMENT SCOPE OF WORK:**

- Two homeport terminals
- 1\textsuperscript{st} floor common core for CBP, expanded baggage handling
- Total estimated project cost = $100M
- $10M allocated in fy19-23 for design & permitting
• Provide adequate harbor depth to serve next-generation container ships
• Modernize & upgrade existing container terminal facilities to better serve current needs
• Develop facilities & equipment to serve next-generation container ships
• Support the growth of the seafood processing business
• Provide efficient operation for the growing cruise terminal business
Professional Services

- Design Services:
  - Building
  - Non-Building
- Term Consultants
- Environmental Services

Construction Services

- MGL c.149: Building Construction Contracts (ECC < $5 MIL)
- MGL c.149A: CMR (Construction Management at Risk) (ECC > $5 MIL)
- MGL c.30: Public Works (Non-Building)
- MGL c.149A s.14-21: Design-Build Public Works (ECC > $5 MIL)

Term Construction Contracts
**Professional Services**

- **Design Services:**
  - Building (MGL c.7C s.44)
  - Non-Building
- **Term Consultants**
- **Environmental Services**

*The process is similar, but the Selection Panel changes by project type*
CONSULTANTS SELECTION CRITERIA

- Experience of the team and communication skills of the PM
- Minimal disruption to airport operations
- Familiarity with Ch. 149, Ch. 149 A, Ch. 30
- Experience in using and managing BIM
- Experience in Lean Design & Construction
- Cost and Schedule management
- M/WBE proposed percentage
- Current and Past work with the Authority
- Experience with Sustainability and Resiliency
- Design Approach ... “Design Excellence”
OPPORTUNITIES

- Expansion of Framingham Garage
- Braintree Parking Garage
- Cruise Terminal
- R/W 27 Safety Area – Environmental and Preliminary Design
- Hanscom Navy Hangers
- T/W R - Hanscom
- Terminal A Improvements and Connectivity Analysis
- EA Airfield On-Call
- EA Landside On-Call
- AE On-Call
- Project Controls On Call
ONGOING INITIATIVES

• PMWeb Implementation
• Bid Express - Online Bidding
• CPM – P6 Scheduling
• BI and Data Warehouse
• Earned Value Guidelines
• Cost Estimating Guidelines
• Project Dashboards
PMWeb Update

- All Projects > $5 Million are being completely managed in PMWeb
- All contracts are being initiated and approved in PMWeb
- Consultants are submitting work orders and work order amendments in PMWeb
- Change Orders are being initiated in PMWeb
- In early May, consultants will start submitting all invoices in PMWeb
PMWeb Accomplishments

• Successfully configured and utilizing the Engineering, Financial Modules and Document Manager on Capital Projects

• Successfully migrated all Authority-Wide contracts from legacy Contract Execution system (30,000 records)

• Successfully replaced all functionalities of the old Contract Execution system with PMWeb

• Successfully integrated the Authority’s Capital Planning System with PMWeb

• Successfully integrated vendors, contracts, work orders, invoices and requisitions between PMWeb and PeopleSoft

• Successfully migrated all Work Orders, Work Order Amendments, Change Orders, Invoices, and Requisitions for all projects dating back to 2012

• Zero Audit Findings for First Project to be completely managed within PMWeb
**Primavera P6 Team Member** serves as the primary tool for Project Managers and Assistant Project Managers to access, update, and manage their assigned projects schedules.

**Benefits to Date**
- Easy Retrieval and Review/ Updates of Schedules (approximately 200 active projects)
- Schedule Integrity
- Executive Schedule Templates for all Capital Program Projects
- Repository for Consultant, Contractor and CM Schedules and linking to Templates
- Improved Cash Flows
BI and Data Warehouse Services

**BI and Data Warehouse Major Objectives**

- Strategic planning and BI & Data Warehouse Roadmaps
- Selection of the front-end data visualization software
- Prototyping and proof-of-concept exercises
- Consolidating multiple databases and creating a standard ETL process to ensure the validity of the data
- Develop the architecture and oversee the implementation of the Data Warehouse
- Front-end analytical dashboards

**Approach**

- Store
- Liberate
- Enrich
- Integrate
- Analyze
EVM Objectives

- Integrated technical schedule, and cost performance
- Identify key problems for proactive project management
- Consistent and clear communications for project progress
Estimating Guidelines

“The first number published is the only number remembered.” – J. Oswell

Estimating Guidelines Objectives

• To establish consistence and improve estimate accuracy

1. Request For Estimate (RFE) Package
2. Estimate and Scope Kick-Off Meeting
3. Plans and Specifications Readiness Review
4. Determine the Estimate Type and Level Required
5. Develop an Estimate Quality Control Plan (EQCP)
6. Request for Bid Items and Procurement Plan
7. Establish WBS and Tree Level Quantities
8. Draft Basis of Estimate Report
9. Final Estimate and Report Submission
10. Estimate Reconciliation (as needed)

<table>
<thead>
<tr>
<th>Estimate Level</th>
<th>Design Development</th>
<th>Project Phase</th>
<th>Typical Purpose of Estimate</th>
<th>Estimating Methodology</th>
<th>Basis</th>
<th>Estimate Type</th>
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<tbody>
<tr>
<td>Feasibility</td>
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<td>Initial Early Planning</td>
<td>Feasibility study, justification for project, planning and/or funding.</td>
<td>Parametric, Cost Indices</td>
<td>OME or Historical Cost</td>
<td>Uniformat Level I</td>
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<tr>
<td>Conceptual</td>
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<td>Initial Early Planning</td>
<td>Support investment decision</td>
<td>Parametric, Cost Indices</td>
<td>OME or Historical costs</td>
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<td>Schematic Design</td>
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<td>Preliminary Design</td>
<td>Preliminary Cost Development</td>
<td>Parametric, Cost Indices</td>
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<td>Construction Documents (CD)</td>
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Project Dashboards

Capital Program FY19-23

Schedule Activity History

Major Critical Path

WIN OF THE WEEK:

The team has exceeded their WARR Goal.
Questions

Thank you!