Airport Sustainability
Economic and Operational Benefits

April 21, 2016
Reduce Energy
Air Quality and Greenhouse Gas Emission
Reduce Water
LEED Certification
Asset Optimization
Airport Economic Vitality
Noise Reduction
Solid Waste Recycling
Preserve Natural Areas
Focus on One or Two Categories

- Economic Viability
- Natural Resource Conservation
- Operational Efficiency
- Social Responsibility
Airport Sustainability Steps

Phase 1
- Establish Airport Vision
- Evaluate Local Sustainability Efforts
- Establish Focus Areas and Goals

Phase 2
- Establish Key Performance Indicators/Metrics
- Conduct Baseline Assessment
- Development Performance Targets

Phase 3
- ID Sustainability Initiatives Ongoing and Future
- Develop Implementation and Monitoring Program
- Monitor Performance on Monthly and Annual Basis
Sustainable Practices and Airport O&M

**Life-Cycle Evaluation**

**Sustainability Practice Identification**
- Start-Up Costs
  - Facility Construction and Upgrades
  - Equipment and Materials
  - Training and Certification
  - Old Facility Removal O&M Procedure Updates
  - Other Startup Costs
- O&M Costs
  - Labor and Overhead
  - Recurring Training
  - Equipment and Materials
  - Utilities
  - Other O&M Costs
- End of Life Costs
  - Decommissioning
  - Removal
  - Disposal
  - Site Restoration
  - Other End of Life Costs

**Performance and Qualitative Metrics**
- Tenant/Customer/Public Impact
- Employee Impacts
- System and Equipment Impacts
- Safety Initiatives
- Overall Airport Efficiency
Initiative Sample Screening Requirements

✓ Capital costs
✓ Life-cycle costs
✓ Return on investment (where applicable)
✓ Ability to meet sustainability goals (e.g., GHG reductions, energy savings, water savings)
✓ Staffing and maintenance requirements
✓ Potential funding mechanisms
# Example: Asset Optimization – Fleet Utilization

## Future Initiatives

<table>
<thead>
<tr>
<th>Ongoing Initiatives</th>
<th>Near Term (1 to 2 Years)</th>
<th>Mid-Term (3-5 years)</th>
<th>Long-Term (6 to 10 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilize computer program to capture fleet asset data</td>
<td>Produce and distribute “asset” sustainability scorecard to end users</td>
<td>Identify, implement and provide training on a lifecycle costing tool to inform operations, maintenance, planning and design</td>
<td>Use TRIP documentation to define “asset” (aggregation level) for building assets and use this definition to expand to asset information collected for the rest of the airport</td>
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<tr>
<td></td>
<td>Develop sustainability criteria for “asset” renewal process</td>
<td>Use GPS to track vehicle use and driver behavior and use the data to manage the fleet</td>
<td>Acquire clean vehicles for the fleet</td>
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</tbody>
</table>

## Goal: Reduce overall life cycle cost for capital investments

<table>
<thead>
<tr>
<th>Key Performance Indicator (KPI)</th>
<th>Metric(s)</th>
<th>Baseline</th>
<th>Target</th>
</tr>
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<tbody>
<tr>
<td>Plan for long-term monitoring and maintenance</td>
<td>Percentage of assets tracked in tracking system</td>
<td>No data currently available (100% buildings screened outside of tracking system)</td>
<td>Measurement of baseline by 2026: 100% of new vehicles; 100% of buildings</td>
</tr>
<tr>
<td>Life-cycle cost of assets</td>
<td>Percentage of assets that go through life-cycle analysis</td>
<td>No data available</td>
<td>Identification of life-cycle costing process and measurement of the baseline by 2026</td>
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<td>Life-cycle cost/year of use (by asset)</td>
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Sample Implementation Plan Format

### Implementation Plan

<table>
<thead>
<tr>
<th>Sustainability Practice</th>
<th>Goals:</th>
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<table>
<thead>
<tr>
<th>Scope</th>
<th>KPIs</th>
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<table>
<thead>
<tr>
<th>Start Date:</th>
<th>Target Completion Date:</th>
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<table>
<thead>
<tr>
<th>Champion(s)</th>
<th>Key Stakeholders</th>
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<tr>
<th>Specific Action Item(s)</th>
<th>Priority (High/Med/Low)</th>
<th>Responsible Party (Job/Personnel)</th>
<th>Deliverables</th>
<th>People Resource Needs</th>
<th>Financial Resource Needs</th>
<th>Schedule/Milestones</th>
<th>Status*</th>
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Status*: Green = Ongoing; Grey = Planned; Yellow = Need Help; Red = Behind; Completed = Blue
Other Tools: FAA PAVEAIR Life Cycle Analysis
https://faapaveair.faa.gov
Airport Sustainability Metrics
Tracking Initiatives and Resources

- Identify Goals
- Identify what you should measure
- Identify Measurement Metrics
- Gather Data
- Evaluate Monthly
- Take Action to Reach Goals
Airport Mowing

Case Example: Renton Municipal Airport

- New mower
  - Reduced staff time
  - Reduced emissions
  - Life Cycle Cost Analysis proved long-term savings
Airport Mowing

Case Example: Chicago O’Hare International

• O’Hare Herd
• 40 animals “mow” grass
  ✓ Reduce staff time
  ✓ Reduce emissions
  ✓ Increase safety
Utility Costs Reduction

• Case Example: Lakeland Linder Regional Airport
• Public-Private Partnership
  ✓ Utility builds solar field
  ✓ Airport buys electricity at fixed rate
  ✓ Airport makes land available
    • Earns credits equaling $0.02/kWh or $250,000 annually

Lakeland Linder Regional Airport PV solar field (Source: B. Fay 2014).
Soil and Aggregate Reuse

- Case Example: Chicago O’Hare International
- Soils reused or stockpiled
  - Cost savings > $150M
  - 630,000 truck trips prevented
  - 73,000 tons of CO₂ mitigated
St. Lucie International Airport
Cold in Place Recycling – Taxiway A and C
Soil and Aggregate Reuse

- Case Example: Phoenix Sky Harbor International Airport
- Taxiway C Project
  - Reused existing pavement for soil reconditioning
  - Saved 16% in water use
  - Reduced particulate emissions by 39%
  - Reduced material production energy by 26%
  - Saved $1.5M – most from pavement recycling
Other Cost Saving Initiatives

- Green stormwater concepts
- Green building designs and use of daylighting
- Native landscaping
- Rotating beacon/cell tower
- Thermal window shades
- Solar Obstruction Lighting
- Natural Gas or Battery Operated Vehicles
Mankato Regional Airport Enhanced Master Plan

- Efficient Public Buildings
- Efficient Private Buildings
- New Green Buildings
- Efficient Outdoor Lighting and Signage
- Building Redevelopment
- Comprehensive Plans
- Compatible Land Use
- Efficient Growth
- Mixed Uses
- Natural Resource Conservation
- Living Streets
- Mobility Options
- Efficient Vehicle Fleets
- Demand-Side Travel Planning
- Bio Fuels
- Sustainable Purchasing
- Urban Forests
- Stormwater Management
- Surface Water Quality
- Efficient Water and Wastewater Facilities
- Septic Systems
- Solid Waste Reduction
- Local Air Quality
- Benchmarks and Community Engagement
- Green Business Development
- Renewable Energy
- Local Food
- Business Synergies
- Climate Adaptation
- Community Resilience
- Direct and Indirect Economic Benefits
Sustainable Initiative Integrated with Master Plan Process

**Sustainability Initiatives**
- Conduct Sustainability Baseline Assessment
- Establish Sustainability Goals and Objectives
- Airport Sustainability Role and Opportunities
- Identify Airport Sustainability Initiatives
- Development Sustainability Performance Targets
- Develop Implementation and Monitoring Program

**Master Plan**
- Baseline Facilities Assessment
- Airport Alternatives
- Project Phasing
- Capital Improvement Plan

[Diagram showing the integration of sustainability initiatives with master plan processes]
THANK YOU

Questions?

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