A FRAMEWORK AND CREATIVE STRATEGIES FOR CAPITAL PLANNING
Capital Planning Suite:
• Asset Planning – Capital and Life Cycle planning / Decision making and benchmarking
• Project Planning – Funding approvals and Management

Maintenance Management Suite:
• Preventative Maintenance - Work Order Management / Demand response management
• Service Request - Day to Day field management & ad-hoc requisition management and tracking

Energy Management Suite:
• Energy & Sustainability – utility tracking, benchmarking, management, QSUM, Weather trending/normalization
• Analytics Planner – Live metering, interactive reporting, BAS connectivity, analytic optimization & management
• M3 – Measurement Management Module (integrating energy optimization with life cycle management)
Enhancing the Quality of Community & Living

- **Real Estate Criteria**
  - Asset Valuation
  - Land Valuation

- **Physical Asset Criteria**
  - Building Condition Needs
  - Unfunded Liability
  - FCI

- **Utilization Criteria**
  - Facility utilization
  - Accommodation planning
  - Functional Index
  - Own vs. lease

- **Financial Criteria**
  - Capital Costs
  - Operating Costs
  - Capital Creation Strategies
  - Incentives

- **Environmental Criteria**
  - Carbon Footprint
  - Energy Conservation
  - Renewable Solutions

- **Tools, Processes & Policies**
UNIQUE DATA DEVELOPMENT: BEST PRACTICES

Unique Data Development: Best Practices

- **Quickly** establish Life Cycle cost profiles for all assets utilizing data modeling techniques
- **Consistency** and **Standardization**

MODEL

**Basic Asset Details:**
- Age
- Size
- Number of Floors
- Use / Type of Asset

**Life Cycle Cost “Templates”**

**Validation of Asset Templates:**
- Incorporation of existing Data Sources
- Staff Interviews
- Targeted On-site Validation

DATA VALIDATION

Life Cycle Forecast for each Asset
COMPONENT INVENTORY

**Mechanical**
- Heating Systems
- Ventilation Systems
- Air Conditioning
- Plumbing / Drainage
- Building Controls
- Fire Prevention

**Electrical**
- Power & Distribution
- Interior Lighting
- Exterior Lighting
- Emergency Power
- Fire Alarm System
- Comm / IT Systems
- Security Systems
- Clock Systems

**Architectural / Structural**
- Roofing, Windows, Exterior Doors
- Foundation & Exterior Walls
- Flooring & Ceilings
- Interior Walls / Doors / Millwork
- Painting & Window Coverings
- Accessories & Equipment

**Property / Site**
- Roadways / Driveways
- Paving & Walkways
- Retaining Walls
- Landscaping
- Fencing
- Underground Utilities
AUDITPLANNER™
DATA CAPTURE AND MANAGEMENT

Wireless Download from AssetPlanner

Assess Facilities using AuditPlanner™

Wireless Upload to AssetPlanner for QC

©2018 Ameresco, Inc. All rights reserved.
<table>
<thead>
<tr>
<th>Discipline Category</th>
<th>Discipline Name</th>
<th>Replacement Cost</th>
<th>Last Major Action</th>
<th>Year</th>
<th>Brief Description</th>
<th>Commentary</th>
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<td>Electrical, Technology</td>
<td>$2,630,188</td>
<td>1993</td>
<td>2020</td>
<td>Poor condition, many marker boards at end of life. TVs not FCPS current standard.</td>
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<td>Mechanical Rooms and Building Systems</td>
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<td>C-Interiors</td>
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<td>D-Services - Electrical</td>
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<td>$17,820</td>
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**Example Entry:**

**Discipline Category:** D-Services - Electrical  
**Discipline Name:** Electrical, Technology  
**Replacement Cost:** $2,630,188  
**Last Major Action:** 1993  
**Year:** 2020  
**Brief Description:** Poor condition, many marker boards at end of life. TVs not FCPS current standard.  
**Commentary:** |

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**ASSESSMENT REPORTING**

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CAPITAL NEEDS BY DISCIPLINE

Life cycle renewal costs for the major building elements have been established for each building to determine the Capital Renewal budget requirements over the next 30 years.

$6.1M average annual funding

2020 Deferred Backlog: $81.8M
RISK REVIEW: PRIORITY RANKING

Total Deferred Backlog of $81.8M includes $71.2M deemed Urgent and High Priority.
PROJECTED TOTAL LIABILITY

The total liability represents the cumulative renewal needs of the portfolio based on the findings and results obtained from the life cycle renewal cost analysis.

- **2020 Liability**: $81.8M (Deferred Backlog)
- **2049 Liability**: $497M
PROJECTED UNFUNDED LIABILITY

Cumulative lifecycle renewal costs (top line) and the average annual capital funding allocation (purple area) of $6.1M per year.
FACILITY CONDITION INDEX (FCI)

Industry standard index used to track condition performance of facilities and portfolios

\[
FCI = \frac{\text{Renewal and Repair Costs}}{\text{Replacement Cost}}
\]

- **GOOD Range:** FCI (0% - 5%)
- **FAIR Range:** FCI (5% - 10%)
- **POOR Range:** FCI (10% - 30%)
- **CRITICAL Range:** FCI (> 30%)
The portfolio has a 2020 FCI of 10.3%, placing the facilities in the Poor range. Without funding, the FCI would migrate to “Critical” by 2030.
Overlaying the District’s average annual capital funding of $6.1M delays the migration of the portfolio to the “Critical” range to 2044. Additional funding will be required to sustain the portfolio at an acceptable level of risk.

Average Annual Funding: $6.1M per year

With funding, FCI migrates to Critical by 2044

Additional Funding Required
Establishing an Asset Sustainability Target of 10% (Fair) will “sustain” the assets at an acceptable level of risk. This will require $13.9M annual funding over the next 30 years, or a total of $417M.
## FCI MIGRATION – UNFUNDED

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<th>FCI Year 5</th>
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<td>74.3%</td>
<td>89.6%</td>
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CAPITAL CREATION STRATEGIES (CCS)

- Program Development
  - Comprehensive Program Management
- Build Winning Business Cases
  - Overcome Funding Challenges
- Reduce Liability ($ and FCI)
  - Improve Quality of Teaching, Learning

Capital Creation Strategies

- O&M Optimization
- Real Estate Strategies
- Energy Solutions
- Capital Program Management

O&M Optimization
- Maintenance Optimization
- O&M Services
- CapEx / OpEx Optimization

Energy Solutions
- Data Analytics
- Energy Efficiency
- Demand Response
- Energy Procurement
- Distributed Generation

Capital Program Management
- Bundling
- Sequencing
- Sourcing

Real Estate Strategies
- Fixed Asset Review
- Energy Tax Credits/Rebates
- Property Tax Assessment Challenge
- Property Insurance Validation
CCS: O&M OPTIMIZATION

O&M Optimization
- Maintenance Optimization
- O&M Solutions
- CapEX / OpEx Optimization

Energy Solutions
- Data Analytics
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- Energy Procurement
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Capital Program Management
- Bundling, Sequencing and Sourcing

Real Estate Strategies
- Fixed Asset Review
- Energy Tax Credits/rebates
- Property Tax assessment challenge
- Property Insurance Validation

Indirect Expense Mitigation

Categories
- Ongoing Bill Monitoring
- Savings

Estimates:
- 31% Maintenance
- 28% Energy
- 26% Labor
- 24% Procurement
- 21% Fixed Asset
- 27% Property
- 34% Other

Maintenance Optimization

Lifecycle Analysis

Estimated Savings: ~ $390K per Year
CCS: O&M OPTIMIZATION

Life Cycle Analysis – CapEx / OpEx Optimization

$ COST

$M

TIME

C1

C2

M1

M2

SC

Life Cycle Gain

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CCS: ENERGY SOLUTIONS

O&M Optimization
- Maintenance Optimization
- O&M Solutions
- CapEX / OpEx Optimization

Energy Solutions
- Data Analytics
- Energy Efficiency
- Demand Response
- Energy Procurement
- Distributed Generation

Capital Program Management
- Bundling, Sequencing and Sourcing

Real Estate Strategies
- Fixed Asset Review
- Energy Tax Credits/rebates
- Property Tax assessment challenge
- Property Insurance Validation

Estimated Savings:
~ $430K per Year + ESPC Option
DEEP DIVE ANALYSIS INTO ENERGY LEVERAGING

- The data highlights that 40+% of the total needs are related to the mechanical, electrical, and plumbing backlog.

2020 Deferred Backlog: $81.8M

$6.1M average annual funding
The roofs have reached the end of expected useful life

Roof mounted Solar PV
- Greening
- Power generation
- Extending roof life
CCS: CAPITAL PROGRAM MANAGEMENT

O&M Optimization
- Maintenance Optimization
- O&M Solutions
- CapEX / OpEx Optimization

Energy Solutions
- Data Analytics
- Energy Efficiency
- Demand Response
- Energy Procurement
- Distributed Generation

Capital Program Management
- Bundling, Sequencing and Sourcing

Real Estate Strategies
- Fixed Asset Review
- Energy Tax Credits/rebates
- Property Tax assessment challenge
- Property Insurance Validation

Program Management

Deep Retrofits

Project Coordination

Estimated Savings: ~ $360 K per Year
CCS: REAL ESTATE STRATEGIES

- **O&M Optimization**
  - Maintenance Optimization
  - O&M Solutions
  - CapEX / OpEx Optimization

- **Energy Solutions**
  - Data Analytics
  - Energy Efficiency
  - Demand Response
  - Energy Procurement
  - Distributed Generation

- **Capital Program Management**
  - Bundling, Sequencing and Sourcing

- **Real Estate Strategies**
  - Fixed Asset Review
  - Energy Tax Credits/Rebates
  - Property Tax assessment challenge
  - Property Insurance Validation

---

**Fixed Asset/Epact 179D**

**Tax Assessment**

- Property Value Assessments
  - Challenge with Deferred Maintenance

**Insurance Validation**

One-Time Savings: ~ $250 K (Year 1)
## CCS RESULTS SUMMARY

<table>
<thead>
<tr>
<th>Summary</th>
<th>Capital Creation Strategy</th>
<th>Est. Saving</th>
<th>Recommended Next Step</th>
<th>Interest</th>
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<tbody>
<tr>
<td>One Time: $720K (1st Year)</td>
<td>Fixed Asset Review</td>
<td>N/A</td>
<td>Not applicable for Public or Not-for-Profit Entities</td>
<td>Y/N/TBD</td>
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<tr>
<td></td>
<td>Energy Tax Credits</td>
<td>$250K</td>
<td>Request list of energy projects completed since 2016 for analysis and proposal from Partner</td>
<td>Y/N/TBD</td>
</tr>
<tr>
<td></td>
<td>Utility Rebates</td>
<td>$470K</td>
<td>One time rebates from Utilities</td>
<td>Y/N/TBD</td>
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<tr>
<td></td>
<td>Maintenance Optimization</td>
<td>$140K</td>
<td>Schedule meeting for deeper dive into options and select areas to focus engagement</td>
<td>Y/N/TBD</td>
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<tr>
<td></td>
<td>O&amp;M Services</td>
<td>$105K</td>
<td>Consider bundling solution into MEP project / program services / outsourcing</td>
<td>Y/N/TBD</td>
</tr>
<tr>
<td></td>
<td>OpX/CapX Optimization</td>
<td>$140K</td>
<td>Schedule workshops with District team to review and consider actions</td>
<td>Y/N/TBD</td>
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<tr>
<td></td>
<td>Data Analytics &amp; Management</td>
<td>TBD</td>
<td>Notes: Active building management, linking BAS to Schedule / Occ, Dashboards</td>
<td>Y/N/TBD</td>
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<tr>
<td></td>
<td>Energy Efficiency</td>
<td>$850K</td>
<td>Develop Energy masterplan; identify &amp; evaluate specific ECMS, savings and costs</td>
<td>Y/N/TBD</td>
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<tr>
<td></td>
<td>Energy Procurement</td>
<td>$80K</td>
<td>Request copies of any existing gas supply contracts for analysis &amp; recommendation</td>
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<td>Demand Response</td>
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<td>Develop Energy masterplan; monetize distributed generation assets (Ameresco)</td>
<td>Y/N/TBD</td>
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<td>Develop Energy masterplan; Post energy efficiency phase, focus on distributed generation assets (Ameresco)</td>
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<td>Capital Program Management</td>
<td>$60K</td>
<td>Request copy of current 10-year capital plan for analysis and NPV payback of implementing new life-cycles by Ameresco</td>
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<td>Property Insurance Review</td>
<td>$60K</td>
<td>Request copy of current insurance policy &amp; annual premium for analysis and proposal from consultant</td>
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<td>Annual: $1.442 M per Year</td>
<td>Fixed Asset Review</td>
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Capital Creation Strategies (CCS) Results

$720K One-Time, 1st Year Savings

- Fixed Asset Review $250K
- Energy Tax Credits $250K
- Utility Rebates $470K

$1,442K Savings Annually

- Maintenance Optimization $140K
- O&M Services $105K
- OpX/CapX Optimization $140K
- Energy Efficiency $850K
- Energy Procurement $80K
- Demand Response TBD
- Distributed Generation TBD
- Capital Program Management $60K
- Property Insurance Review $60K

Up to $47M leveraged dollars
## Leveraging OpEx Savings

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<td>Project Value</td>
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<td>Annual Energy and O&amp;M Savings</td>
<td>$1,442,000</td>
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<td>Utility Rebates Estimate (one-time)</td>
<td>$469,705</td>
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<td>Project Annual Contribution</td>
<td>$2,093,333</td>
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<td>Accumulated Cash Flow @ YEAR 15</td>
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<td>Accumulated Cash Flow @ YEAR 20</td>
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<td>Accumulated Cash Flow @ YEAR 25</td>
<td>$28,015,276</td>
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Note: 67 cent dollars
Overlaying the 4-year funding plan reduces the 30-year required capital appropriation from $417M to $346M, or from $13.9M per year to $11.5M per year.
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### FCI MIGRATION – AFTER

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## FINANCIAL SOLUTION (4-YEAR PLAN)

4 Year Capital (Deferred Maintenance) Needs: $150 M  
Max Value of Deferral (to maintain 10% FCI): $79 M  
Required Funding over 4 years: $71 M

<table>
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<th>Deferred Maintenance Addressed</th>
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<td>Phase 2</td>
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<td>Fund Request</td>
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<tr>
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<td>$71 M</td>
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TOTAL LIABILITY – UNFUNDED

Over a 4-year outlook of portfolio needs, a capital infusion of $71M will be required to sustain the assets at an acceptable level of risk (FCI of 10%).

- **2020 Liability**: $81.8M (Deferred Backlog)
- **2023 Liability**: $150M
- **Unfunded Liability**: ($71M)
- **Asset Sustainability Target**: 10% FCI
PHASE 1 IMPACT ($20M PROGRAM)

In the same time period, the impact of the Phase 1 program will reduce the required capital infusion by $15M, to a total of $56M.
PHASE 1 + 2 IMPACT ($27M PROGRAM)
Additionally, the impact of the Phase 2 program will further reduce the required capital infusion by $27M, to a total of $29M.
PHASE 1 + 2 + FUNDING REQUEST

Further, a funding request of $29M will meet the required capital needs in order to sustain the portfolio at an acceptable level of risk over this time period.
EPA GREENHOUSE GAS SAVINGS BY PROJECT *

Phase 1: Metric Tons CO2 = 3,534 Total (4,558,090 KWH and 58,579 therms of NG)

Combined: Totals: Metric Tons of CO2 = 3,534 plus Phase 2 (TBD)

* The sum of the greenhouse gas emissions is equivalent to the above based on the US Environmental Protection Agency (EPA) Greenhouse Gas Equivalencies Calculator found at www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.
THANK YOU

Tim Dettlaff
Senior Vice President & General Manager
tdettlaff@ameresco.com
(763) 516-3905