Enhancing Facility Quality

“A Decision Making Framework”

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Asset Planning/Facility Renewal Experience

- City of Kingston
- City of Oshawa
- City of London
- Region of Peel
- City of Brampton
- City of Peterborough
- City of Vancouver
- City of Toronto

- Toronto Community Housing
- Kingston Housing
- Frontenac Community Mental Health
- Mainstay Housing
- Ontario Aboriginal Housing
- New Brunswick Housing Corporation
- BC Housing
- Metropolitan Vancouver Housing
Today’s Issues

- On-going building deterioration
- Declining Asset value (real and perceived)
- Escalating costs (operating & capital)
- Shrinking capital renewal allowances
- Growing operating needs (utilities, etc.)
- Desire for extended building life
Goal: Enhancing Facility Quality

Financial Stewardship (Viability)
Environmental Responsibility (Green, Clean)
Asset Sustainment (Sustainable)

Capital Leveraging
- Quantification of Need
- Solutions & strategies
- Leveraged Finance

Limited funding

$
Maximizing Asset & Renewal Strategies

- Quantify Needs (Ops/Cap)
- 5 & 30 Year Capital Plan
- Dynamic Data Management
- Capital Leveraging
- Energy & Renewable Solutions
- Redevelopment Strategies
- Efficient Design
- Streamlined Tendering
- Construction Management
- Affordable Construction
- Green Technology
Maximizing Asset & Renewal Strategies

- Quantify Needs (Ops/Cap)
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Data Development

Unique Data Development – Best Practices

- Quickly establish life cycle cost profiles for all assets utilizing data modeling techniques
- Establish Life Cycle cost profiles and timelines for each facility

**Basic Asset Details**
- Age
- Size
- # floors
- Use / type of asset
- Additions

**Life Cycle Cost “Templates”**

**Validation of Asset Templates**
- Equipment / component existence
- Year of last replacement
- Incorporate various data sources

**Life Cycle Profile for Each Asset**

MODEL

DATA VALIDATION

(30 – 90 days)

Fully Developed Life Cycle Needs
Basic Asset Data

Basic Asset data requirements:

- Facility Age
- Facility Size
- Number of Floors
- ID # & Name
- Facility Type
  - Community Centre
  - Fire Hall
  - Arena
  - Administration
  - Parking Structures
  - Etc.
## 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
Asset Planner
Asset Planner
Needs Review (Capital Renewal)

- Develop Decision Mapping
  - Asset Planning Framework
- Quantify Capital Renewal Needs
  - Data Development & Management
- 5 Yr & 30 Yr Capital Plan
  - Life Cycle Profiles
  - On-site assessments
- Capital Creation Strategies
  - Benchmark High level savings opportunities

Unfunded Liability

Renewal Costs Per Year

Life Cycle Output

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Capital Renewal Cost Analysis

Anticipated Funding Level

Cost by: Discipline

- B Shell
- C Interiors
- D Services
- E Equipment and Furnishings
- F Special Construction and Demolition
- G Building Sitework
Total Liability
Unfunded Liability (Renewal Gap)
Facility Condition Index (FCI)

- Industry Standard Index Used to Track Condition Performance of Facilities / 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%)
Backlog Funding (FCI Models)

Cumulative FCI - Needs Analysis

- Critical
- Poor FCI

Current (Average Funding: $ 946,667)
Backlog Funding (FCI Models)

Cumulative FCI - Needs Analysis

- Critical FCI
- Poor FCI
- Critical
- Poor
- Fair
- Good

Target: 10% FCI

- Current (Average Funding: $946,667)
- 30% FCI Target (Average Funding: $1,867,518)
- 10% FCI Target (Average Funding: $2,647,782)

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Maximizing Asset & Renewal Strategies

NEED

- Quantify Needs (Ops/Cap)
- 5 & 30 Year Capital Plan
- Dynamic Data Management

STRATEGY / SOLUTION

- Capital Leveraging
- Energy & Renewable Solutions
- Redevelopment Strategies

IMPLEMENTATION

- Efficient Design
- Streamlined Tendering
- Construction Management
- Affordable Construction
- Green Technology

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Strategy / Solution Development

- Capital Creation Strategies
  - Cost Savings Opportunities
- Redevelopment Strategies
  - Disposition/Closure
  - New Construction
  - Financial Leveraging
- Energy Management
  - Conservation Measures
  - Environmental
- Operational Savings Strategies
  - Maintenance Management
  - Life Cycle Offsets

NEEDS
REVIEW

STRATEGY /
SOLUTION

Renewal Liability Comparison

FCI Migration

Unfunded Liability Reduction

FCI Reduction Strategy

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Renewal Liability Comparison
# Redevelopment Strategies

<table>
<thead>
<tr>
<th>Name</th>
<th>FCI (Current Year)</th>
<th>FCI (Year 5)</th>
<th>FCI (Year 10)</th>
<th>FCI (Year 15)</th>
<th>FCI (Year 20)</th>
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<tbody>
<tr>
<td>Administration Office A - Building</td>
<td>24.8%</td>
<td>40.6%</td>
<td>70.6%</td>
<td>73.4%</td>
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<tr>
<td>Airport - Air Terminal Building</td>
<td>15.9%</td>
<td>36.8%</td>
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<tr>
<td>Arena A - Building</td>
<td>11.8%</td>
<td>14.0%</td>
<td>20.4%</td>
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<td>55.6%</td>
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<tr>
<td>Arena B - Building</td>
<td>64.8%</td>
<td>75.3%</td>
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<td>117.3%</td>
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<td>Civic Centre A - Building</td>
<td>27.2%</td>
<td>55.8%</td>
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<tr>
<td>Community Centre A - Building</td>
<td>33.6%</td>
<td>47.6%</td>
<td>55.8%</td>
<td>58.6%</td>
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<td>Community Centre B - Building</td>
<td>22.6%</td>
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<td>Day Care Centre A - Building</td>
<td>23.9%</td>
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<td>Fire Station #1 Building</td>
<td>14.3%</td>
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<td>Fire Station #2 Building</td>
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<td>Police Station A - Building</td>
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<td>Senior Housing A - Building</td>
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*Ameresco - Green Clean Sustainable*
Establish Renewal “Reduction” Strategies to Reduce Risk and Capital Renewal Liabilities

- Establish strategies that *reduce renewal liability*
- Present full range of *fully leveraged & bundled solutions*
  combining capital creation strategies with operational savings
- Create effective *business plan*
- Develop *communication plan*
Optimized Funding Strategies

- Leveraged and Bundled Capital Creation Strategies:
  - Energy Optimization
  - Renewable Solutions
  - Maintenance Optimization
  - Disposition Strategies
  - Redevelopment Strategies
    - New Facilities
    - Existing Facilities
Total Liability
Unfunded Liability (Renewal Gap)
Unfunded Liability (Renewal Gap)

Cumulative Cost Cumulative Savings

- **Short Term Energy Savings**
- **Reduced Unfunded Liability**

Unfunded Liability  
Short Term Energy Savings  
Funding

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Unfunded Liability (Renewal Gap)

Cumulative Cost vs. Cumulative Savings

- Longer Term Energy Savings and Renewable Solutions
- Reduced Unfunded Liability

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Unfunded Liability (Renewal Gap)

Disposition / Redevelopment Strategy

Reduced Unfunded Liability
FCI Reduction Strategy

Results:
8.2% FCI Reduction to “Fair” range
10 Year Life Cycle Extension

Extended Life = 10 Years
Extra Funding of $149,000 per year to achieve a Fair FCI (10%)
Asset Planner
Maximizing Asset & Renewal Strategies

- Quantify Needs (Ops/Cap)
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- Capital Leveraging
- Energy & Renewable Solutions
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- Efficient Design
- Streamlined Tendering
- Design-Build
- Affordable Construction
- Green Technology

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Step 3: Implementation Solutions

Establish Process to Quickly Implement approved Capital Plan

- Utilize Ameresco’s “Integrated” Construction approach
  - Design Build
  - Integrate Engineering and Construction (single source reporting – simplified process)
- Streamlined subtrade tendering process
- Communicate successes
  - Reduced FCI (based on reduced unfunded liability)
  - Extended Life of building (based on investment)
Renewable Solutions
Implementation Solutions

- Facility retrofits / capital renewal
- New Construction:
  - Affordable Designs
  - Sustainable Designs
  - Cost effective structures
  - Mold resistant
- Green technologies
  - Renewable solutions
Strategic Outcomes

Outcomes enhancing “Facility Quality”:

1. Understanding and quantifying capital replacement needs
2. Enhanced decision making utilizing best practices in asset management & life cycle planning
3. Enhanced asset value
4. Environmental sustainability (reduced Carbon Footprint)
5. Optimal use of Capital dollars
6. Provides leveraged and bundled solutions
7. Integrated construction methods and accountability