MME Pre-Conference Workshop:
Holland’s Sustainability Path

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Andrew Reynolds, HBPW Community Energy Services Manager
Dan Broersma, City of Holland Sustainability Manager
ELECTRIC UTILITY GETS ITS START
How it all began in 1893

- Holland citizens unite and take control of their electric future
- Public lighting is the core reason
- The move is not without controversy
5TH STREET STATION
1900-1940

- Holland’s first power plant, known as 5th Street Generating Station
- What begins as a DC system for lighting, quickly evolves to AC in 1897, shortly after the Columbian Exposition
Drinking Water

- Wells (1885-1955)
- Lake Intake (1955-present)

Wastewater

- First treatment facilities built on north River Ave in 1927
THE EARLY YEARS
Pre-1940

- Early annual reports track the amount of connected uses
- By the 1930’s Holland is outgrowing its current plant and must make a big decision

Appliances:

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat irons</td>
<td>1,864</td>
<td>50.50</td>
</tr>
<tr>
<td>Washing machines</td>
<td>116</td>
<td>88.68</td>
</tr>
<tr>
<td>Vacuum cleaners</td>
<td>59.93</td>
<td></td>
</tr>
<tr>
<td>Fans</td>
<td>37.13</td>
<td></td>
</tr>
<tr>
<td>Small motors</td>
<td>39.13</td>
<td></td>
</tr>
<tr>
<td>Toasters</td>
<td>330.00</td>
<td></td>
</tr>
<tr>
<td>Heaters</td>
<td>134.40</td>
<td></td>
</tr>
<tr>
<td>Grills</td>
<td>146.40</td>
<td></td>
</tr>
<tr>
<td>Warming pads</td>
<td>100</td>
<td>9.90</td>
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<tr>
<td>Percolators</td>
<td>80.00</td>
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</tr>
<tr>
<td>Electric plates</td>
<td>23.50</td>
<td></td>
</tr>
<tr>
<td>Curling irons</td>
<td>20.10</td>
<td></td>
</tr>
<tr>
<td>Ranges</td>
<td>66.73</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous appliances</td>
<td>75.00</td>
<td></td>
</tr>
</tbody>
</table>

Total appliance load .................................................. 3,004.60
A NEW HOME!
Holland’s waterfront Post 1940

New JDY Plant
• Holland’s new plant is constructed at a cost of $1.5 Million
• The property is made available by reclaiming soils from the swampy shoreline
• As a result, the plant is built on deep piles

• JDY Generating Station begins with two Allis Chalmers 7.5 Megawatt units
• Plant is stoker coal with rail and ship delivery
• Originally twice our needs, in 12 years it’s not enough!
JAMES DE YOUNG PLANT EXPANSIONS
1940 through 1970
EXPANDING OUR REACH
1970 through 1990

• Tremendous growth!
  – Additional service to the township areas

• New interconnection with Consumers Energy
  – Efficient 138 kilovolt loop

• Michigan Public Power Agency
  – Belle River
  – Campbell 3
ECONOMIC DEVELOPMENT
Added Community Services

Snowmelt System
- First portion installed in 1988 downtown improvement project (3 Blocks)
- ~800,000 sq ft of heated streets and sidewalks (4.9 miles)
- Largest publicly owned system in the country

Broadband Utility
- Fiber loop completed in 1993 to serve BPW facilities and some customers
- Millage on the ballot in August 2022 to expand fiber network to entire City limits
ELECTRIC INDUSTRY UPHEAVAL
1990’s to Present Day

• Breaking down the vertically integrated utility model
• Open access to transmission
• Power marketers
• Wholesale generators
• Change isn’t always smooth
  – ENRON
  – 2003 Blackout

Growing energy demand in Holland prompts HBPW to pursue expanding generation at the James DeYoung coal power plant.

Jun-Aug 2008: Exploring Generation Options
A NEW ERA EMRGES
Holland Energy Park (HEP)
A NEW ERA EMERGES
Holland Energy Park

- Develop a Resource
- Create a Destination
- Enhance a Gateway
- Build a reliable, world class piece of infrastructure
- Provide a sustainable, long term power source
- Become an educational hub
- Increase capacity of the snowmelt system
ABOVE AND BEYOND
Envision™ “Platinum” Certification

- 50% carbon reduction
- Doubled fuel efficiency
- Expanded snowmelt capacity
- Recycled materials from demo and construction
- New park with paved trail and native plants
- Educational visitors center
BENEFITS OF PUBLIC POWER
Local Control

• Direct benefits
  – Not for profit: Every dollar goes back into the community and utility services
  – Rate advantage (vs. investor-owned):
    33% lower residential
    25% lower commercial
    20% lower industrial
  – $97 Million annual electric revenue (FY21)
  – Support City of Holland
    $8.5 Million transfer (FY23)
  – Less outages, faster restoration
  – Local control!

• Indirect benefits
  – Reliability, rates, snowmelt all help provide economic development
**Break and Reconvene for Plant Tour**
COMMUNITY ENERGY PLAN (CEP)
Local Climate Control

- Recommendation from the City Sustainability Committee
- Project Work Team
  - City staff and Consultants
- Mayor’s Energy Task Force
  - Representatives from:
    - City Council
    - HBPW Board representatives
    - Education
    - Chamber of Commerce
    - Real estate investors
    - Business Owners
    - Local residents
COMMUNITY ENERGY PLAN
Key Metrics (2011)

- Ensure economic competitiveness
  - Maintain electric rates at least 5% below MI investor owned utilities in all customer classes year-over-year
- Provide reliable and affordable energy
  - Maintain outage duration (SAIDI) and frequency (SAIFI) values at American Public Power Association (APPA) median or better
- Protect the environment
  - GhG emissions less than 10 MT CO2e per capita by 2050

**24 metric tons**
CO$_2$e per capita (in 2010)

**GOAL = 10 metric tons**
CO$_2$e per capita (by 2050)
TURNING PLANS INTO ACTIONS

Governance Model

2012 CEP Tactic Teams

1. Home Energy Retrofit
   • Operationalized and a program still offered today
2. District Heating
   • Analyzed and not moved forward
3. Industrial Utility Bundle
   • Analyzed and not moved forward
4. Building Energy Labeling
   • Piloted but not moved forward
5. Electric Generation
   • SROI process
6. Community Education and Outreach
   • EWR program, community partners
CONTINUOUS PROCESS IMPROVEMENT
Residential Programs Example

Home Energy Retrofit Pilot (25 homes)

On-Bill Loan Enabling Legislation (PA 408)

Holland Energy Fund – 501(c)3

Home Energy Retrofit (HER) Program

Holland On-Bill Loan program
BPW’s cost of an average EWR rebate = $0.10/kWh saved

City’s share of OBL/HER project cost (2016-2018) ≤ $2.00/kWh saved

City’s share of OBL/HER project cost (2019-2021) ≤ $10.00/kWh saved
REFINING THE STRATEGY
2018 Strategic Development Team

- Increase Home Energy Retrofit Program capacity
- Design new Energy Waste Reduction Programs tailored to Holland
- Monitor and promote effectiveness of district energy at the Civic Center
- Incentivize electric vehicle adoption
- Draft a City alternative fuel purchasing policy for all vehicles and gas-powered equipment
- Study and plan for the impact of autonomous vehicles on infrastructure
- Continue carbon footprint calculation biennially
- Expand and fund energy education
TRACKING PROGRESS
Carbon reduction from 2010-2020

Baseline “Do Nothing” Scenario

Actual Results

2018-2021 CEP Strategies

Metric tons per capita

REFINING THE STRATEGY (AGAIN)
2020-2021 Strategic Development Team

1. Electric Portfolio
2. Building Energy Consumption
3. Transportation
4. Education
5. Offsets

- Targets and Strategies for each lever
- CEP Steering Committee prioritizes which strategies to address first
MOVING THE GOALPOSTS
New Carbon Goal by 2030

BASELINE "DO NOTHING" SCENARIO

ACTUAL RESULTS

2018-2021 CEP STRATEGIES

CEP GOAL
SDT GOAL

Metric tons per capita

2022 STRATEGIES:

**Electric Portfolio**

**TARGETS**

- Achieve 70% reduction in carbon emissions from 2005 levels by 2030
- Maintain electric reliability in the top quartile of municipal utilities in Michigan through 2030
- Maintain electric rate competitiveness at or below 90% of the neighboring IOU for each customer class through 2030

**STRATEGIES**

- Increase renewable supply in HBPW portfolio
- Increase adoption of elective renewable energy rate among all customer classes
- Ensure value of solar is properly represented in the distributed generation program
2022 ACTIONS:

**Electric Portfolio**

- Closure of remaining coal assets by 2028
- Adding solar PPAs
- Promoting Renewable Energy Certificates (RECs)
- Studying value of solar energy for BPW service area

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**Holland BPW**

Did you know that you can elect to have a portion or all of your electricity generated by renewable sources?

**Elective Renewable Energy Rate**

- Holland BPW and the City of Holland have both chosen to purchase all of their electricity for municipal buildings from renewable sources!
- Energy from renewable sources makes up 15% of the energy you receive from Holland BPW!
- If you would like to purchase additional amounts of renewable energy, sign up for the Elective Renewable Energy Rate at: www.hollandbpw.com/en/renewable

- Purchase additional renewable energy in 5% increments of your monthly consumption at the cost of $0.01 premium per kWh.
- Adding 85% gets you to 100% renewable!

Participation requirement: 12 month minimum
2022 STRATEGIES:

Building Energy Consumption

TARGETS

• Establish baseline energy intensity metrics across each customer class by 2025
• Achieve 20% reduction in carbon emissions from buildings from 2020 by 2030
• Achieve 10% reduction from 2020 levels in electricity consumption in each customer class by 2030
• Achieve 15% reduction from 2020 levels natural gas consumption in each customer class by 2030
• Convert 5% natural gas energy use in buildings to electricity by 2030

STRATEGIES

• Increase the electric Energy Waste Reduction program targets and funding
• Incent electrification of energy-consuming devices in all customer classes
• Consider requirements for energy disclosures for buildings sold or rented
• Investigate options to reduce financing burden for businesses
• Challenge the business sector to develop and disclose energy and carbon performance targets
• Reduce carbon from City/HBPW buildings 80% from 2015 levels by 2030
• Investigate potential for creating natural gas free (electric only) zones
2022 ACTIONS:

**Building Energy Consumption**

- Voluntarily continuing BPW’s EWR program (post PA-342)
  - Increasing annual goal from 1% up to 2% savings
- Launching new Beneficial Electrification (BE) rebates
- “Listening Tour” with local industries and ongoing discussions on carbon goals
- Buying renewable energy (RECs) already being purchased for all City/BPW buildings, but a team has been formed to establish energy tracking and reduction recommendations
Holland
MICHIGAN
Sustainability
### History

<table>
<thead>
<tr>
<th>Project</th>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holland Sustainability Committee formed</td>
<td>2008</td>
<td>Project initiated</td>
</tr>
<tr>
<td>Holland Sustainability Action Plan adopted</td>
<td>2009</td>
<td>Action plan established</td>
</tr>
<tr>
<td>City of Holland &amp; Holland Board of Public Works Sustainability Timeline</td>
<td></td>
<td>Timeline for sustainability initiatives</td>
</tr>
<tr>
<td>Holland Energy Park Combined Cycle Natural Gas Plant approved</td>
<td>2010</td>
<td>First phase of energy park approved</td>
</tr>
<tr>
<td>Power Purchase Agreement with North Western Natural Resources (wind gas) executed</td>
<td>2011</td>
<td>Agreement for renewable energy sources</td>
</tr>
<tr>
<td>Power Purchase Agreement with Willcut Wind Farm executed</td>
<td>2012</td>
<td>Agreement for wind energy sources</td>
</tr>
<tr>
<td>Georgetown University Energy Prize Competition</td>
<td>2013</td>
<td>Competition for energy efficiency</td>
</tr>
<tr>
<td>Holland Energy Fund incorporated</td>
<td>2014</td>
<td>Fund established for sustainability projects</td>
</tr>
<tr>
<td>Power Purchase Agreement with Pegasus Wind Farms authorized</td>
<td>2015</td>
<td>Agreement for additional wind energy sources</td>
</tr>
<tr>
<td>On-Bill Financing Program is launched</td>
<td>2016</td>
<td>Program for energy efficiency implementation</td>
</tr>
<tr>
<td>Holland Energy Park named semifinalist in the Georgetown University Energy Prize Competition</td>
<td>2017</td>
<td>Recognition for sustainability efforts</td>
</tr>
<tr>
<td>City Hall Police Dept. and Parks &amp; Recreation Office receive ENERGY STAR certification</td>
<td>2018</td>
<td>Recognition for energy efficiency</td>
</tr>
<tr>
<td>Holland Energy Park earns Innovator of the Year in Governor’s Energy Excellence Awards</td>
<td>2019</td>
<td>Award for innovation in energy efficiency</td>
</tr>
<tr>
<td>City Hall Police Dept. and Parks &amp; Recreation Office receive ENERGY STAR certification</td>
<td>2020</td>
<td>Re-recognition for energy efficiency</td>
</tr>
<tr>
<td>Holland Energy Park earns Environ Platinum award from Institute for Sustainable Infrastructure</td>
<td>2021</td>
<td>Recognition for sustainability achievements</td>
</tr>
<tr>
<td>City begins Sustainability Partnership with OIC Network</td>
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</tr>
</tbody>
</table>
The city purchased has installed new recycling containers for downtown.

- Made from 30% recycled content
Public area recycling

- The city purchased and is installing new recycling containers for indoor public areas.
  - Made from 97% consumer and industrial recycled content
Recycling and the circular Economy

- The city purchases all recycling and waste bins made from 10% post consumer curbside recycling made locally at Cascade Engineering.
Green Storm Water Infrastructure
New Playground

Window on the Waterfront
Revised Home Energy Retrofit Program

Mandatory Education Program

Qualifications
- City Resident
- Complete Utility Consumption Data Release

Benefits
Homeowner Benefits: Receive $500 value in free materials and training with $0 out-of-pocket:
1. BPW Energy Efficiency package
2. Semco Energy Efficiency package
3. Box of Air Sealing/Efficiency Measures (create a supplier or stock box)
   a. Caulk
   b. Spray Foam
   c. Door Seals
   d. Etc.
4. Hour of Training about your home delivered by (trained) local non-profit partner (Habitat, CAA, Community Action House, Green Home Institute, ODC)
   a. Energy package showing 3-5 years of energy usage with graphs
   b. How to use the HEF Box and other freebies
   c. Thermo Images of Home (City Camera)
   d. Educational leave-behinds/flyers/rebate sheets/etc.
   e. HER Grant Application
   f. An Energy Plan for your house
   g. Option for follow-up visit

Grant Qualifications
- Mandatory Education Program Completion (can be after purchase for emergencies)
- Qualifications
  - 5-20% Paid only approved items (paid to Contractor)
    - HVAC (heat pump required)
    - Water Heater (heat pump required)
    - Home Sealing
    - Insulation
    - Full Home Energy Audit

The homeowner can purchase as many of the approved items as they wish with a cap of $30,000.
MISSION The City of Holland Community Energy Plan, adopted on July 18, 2012, has established a CO2e (GHG) goal of 10 metric tons per capita by 2050, from an estimated 24 mt/capita in 2010. Of this amount, about 17% is attributable to transportation, thereby establishing a transportation-related reduction CO2e reduction target of 1.87 mt/capita. This policy is intended to facilitate that goal.
Education
Education

Sustainability Education Events

This Earth Day
PLANT NATIVE
with
LAKESHORE防腐性
and
DeGraaf Nature Preserve
TREE SEEDLING SALE
FRIDAY APRIL 22, 2022
9 AM - 5 PM
Outdoor Discovery Center 4214 56th St, Holland, MI 49423

Earth Day Activity Kit

Composting Workshop

Check THINGS Out at DeGraaf

House Plants 101: Bringing the Outside In

May 17, 9-11am
May 24, 10am-12pm

Volunteer Rainscaping Training
Registration required

Biomimicry with Dana Loomis
SUSTAINABILITY EDUCATION IN HOLLAND

In pursuit of our vision of a vibrant, world-class community, we're piloting a collaborative approach to sustainability education. Each month, we will focus on a key topic and invite community partners to join us in our efforts. Our goal is to reach a broader segment of the population through the channels and sources that they already know and trust.

EDUCATION PARTNERS

Is there a name or organization missing from this list? Let us know!
What’s Next

• Composting: Our Group is helping set the framework for the city to compost food and other organics.

• A drop of recycling center for general and hard to recycle materials.

• Create a program to help all businesses be sustainable.

• Create a Purchasing Policy toolkit with Help from grant from Healthy Babies Initiative and the technical assistance from the ECO Center (University of Michigan)

• DeGraaf Nature center to a Sustainability Center