



MME Pre-Conference Workshop: Holland's Sustainability Path

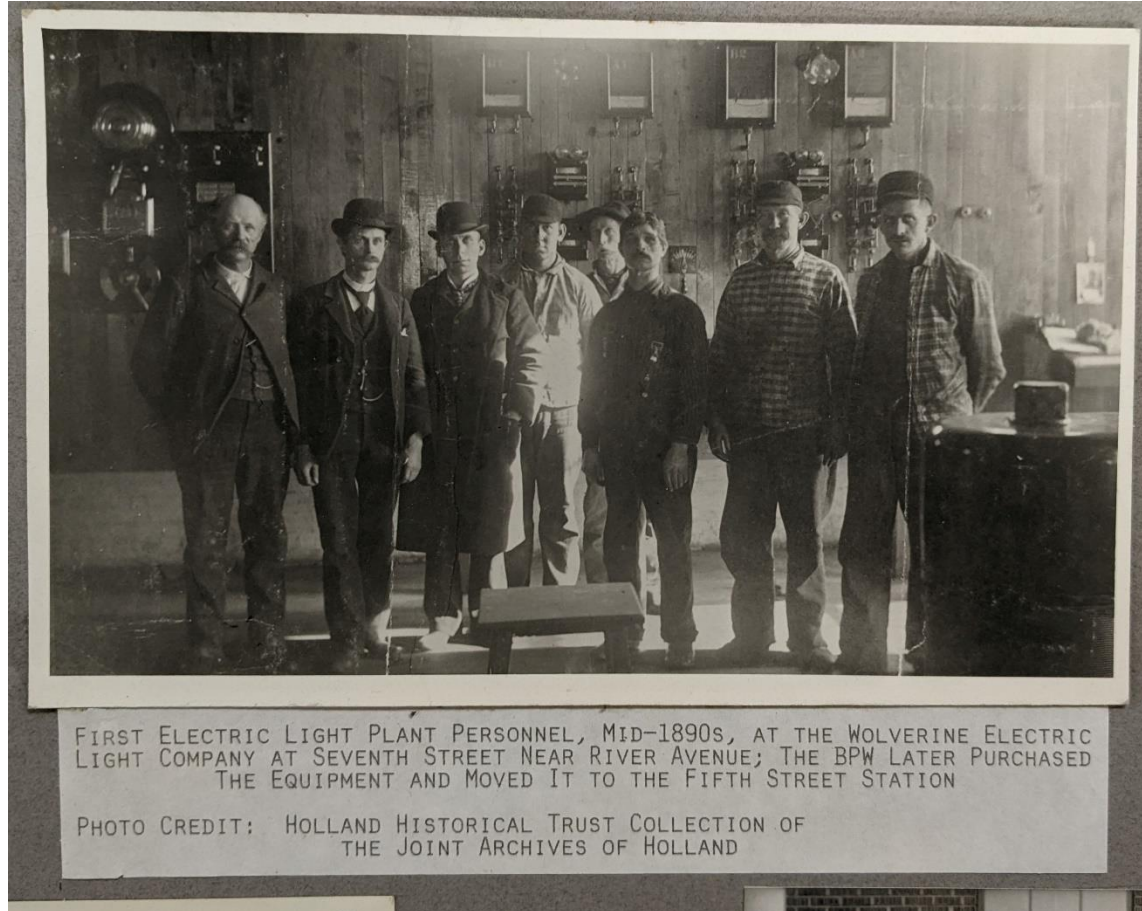
David G. Koster, HBPW General Manager

Andrew Reynolds, HBPW Community Energy Services Manager

Dan Broersma, City of Holland Sustainability Manager

ELECTRIC UTILITY GETS ITS START

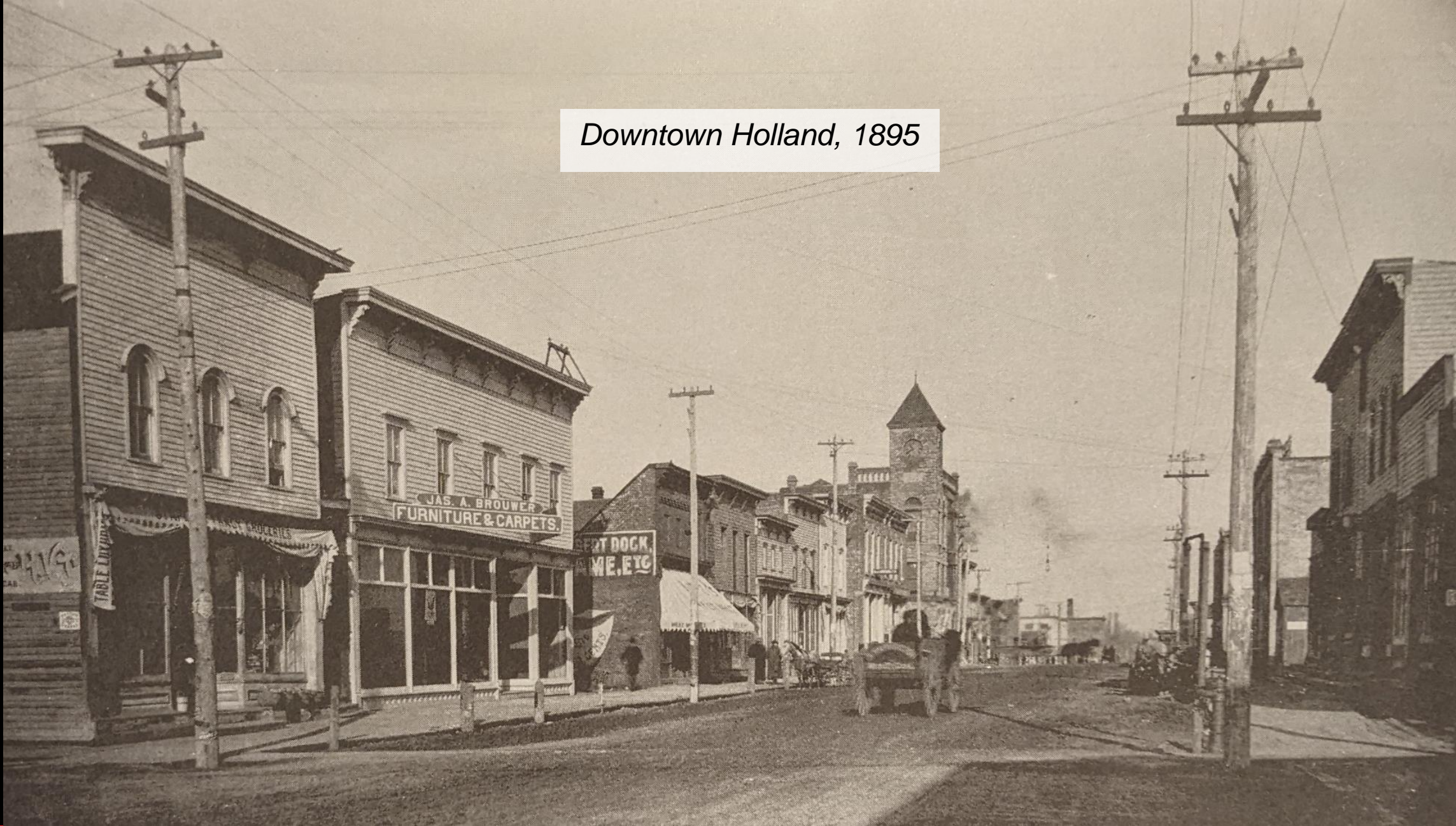
How it all began in 1893



- Holland citizens unite and take control of their electric future
- Public lighting is the core reason
- The move is not without controversy

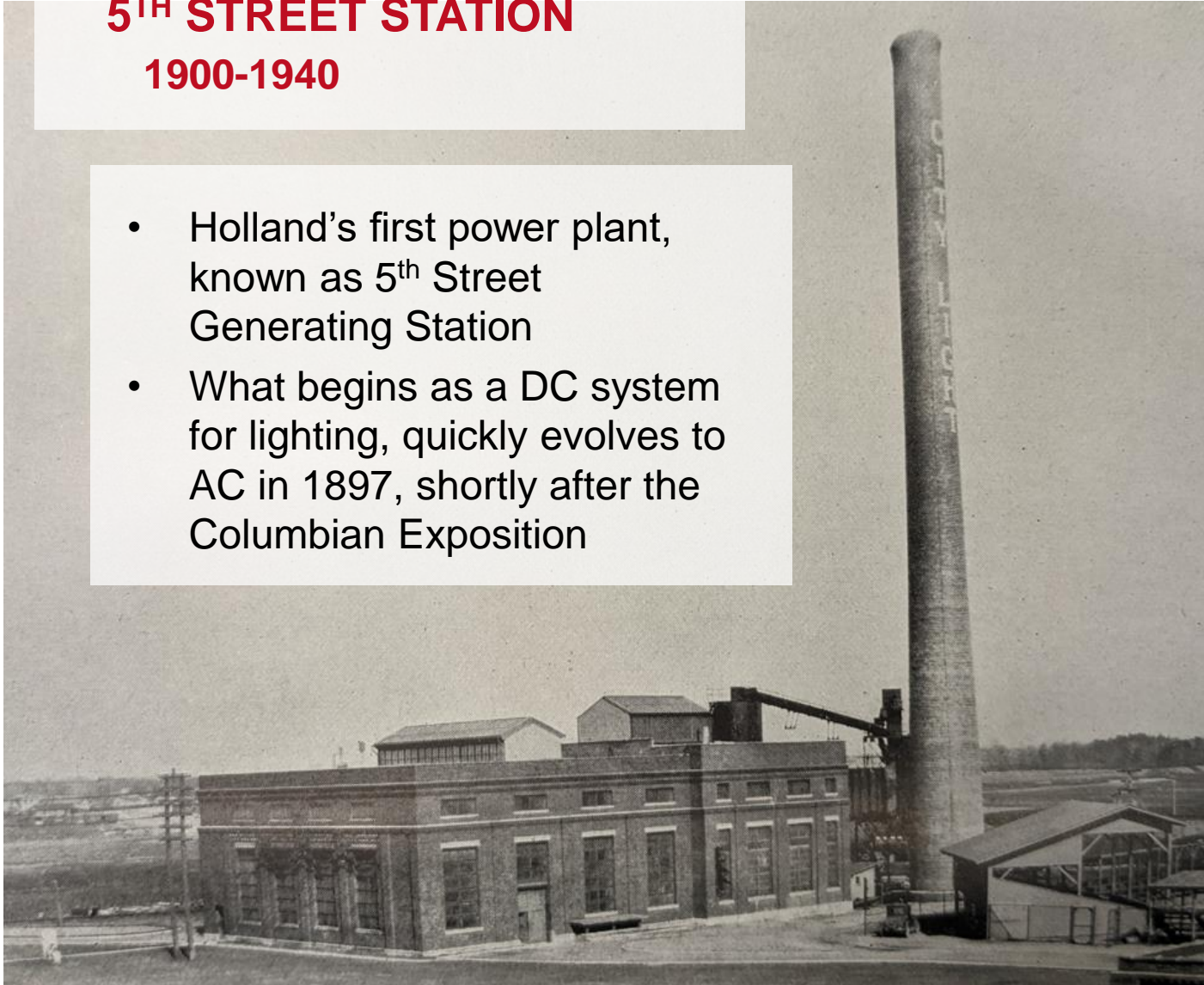


Downtown Holland, 1895



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



Wastewater



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

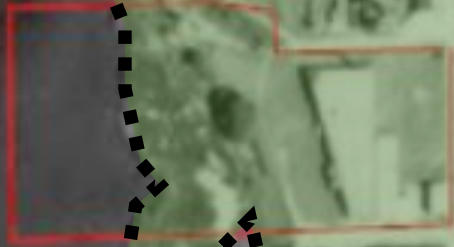
Appliances:

3390—Flat irons	1,864.50
953—Washing machines	116.88
799—Vacuum cleaners	59.93
495—Fans	37.13
412—Small motors	39.13
660—Toasters	330.00
224—Heaters	134.40
244—Grills	146.40
109—Warming pads	10.90
200—Percolators	80.00
47—Electric plates	23.50
201—Curling irons	20.10
13—Ranges	66.73
Miscellaneous appliances	75.00
Total appliance load.....	<u>3,004.60</u>



A NEW HOME!
Holland's waterfront Pre 1940

Lake Macatawa



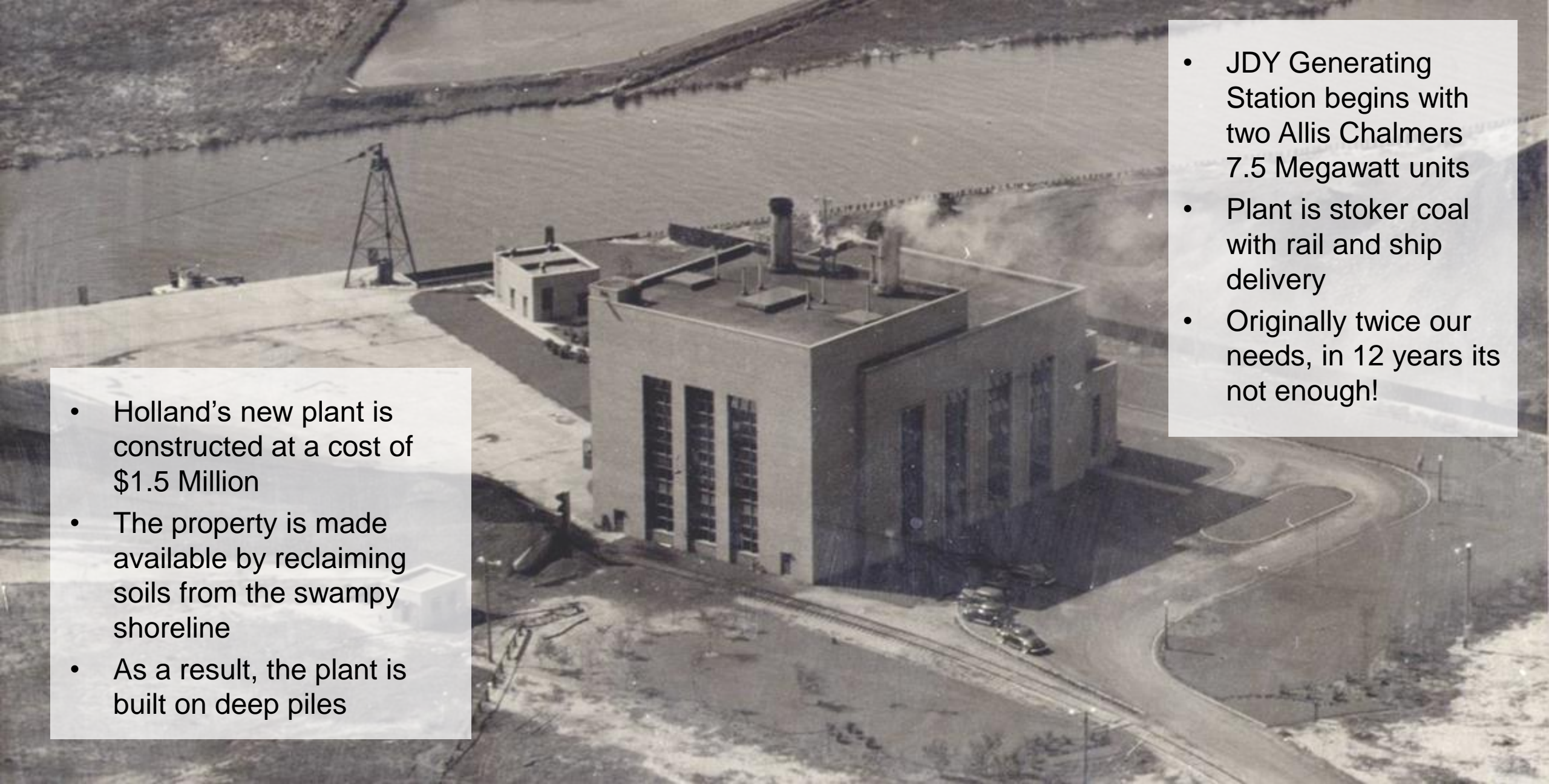
5th Street Plant

Downtown Holland

A NEW HOME!
Holland's waterfront Post 1940

New JDY Plant



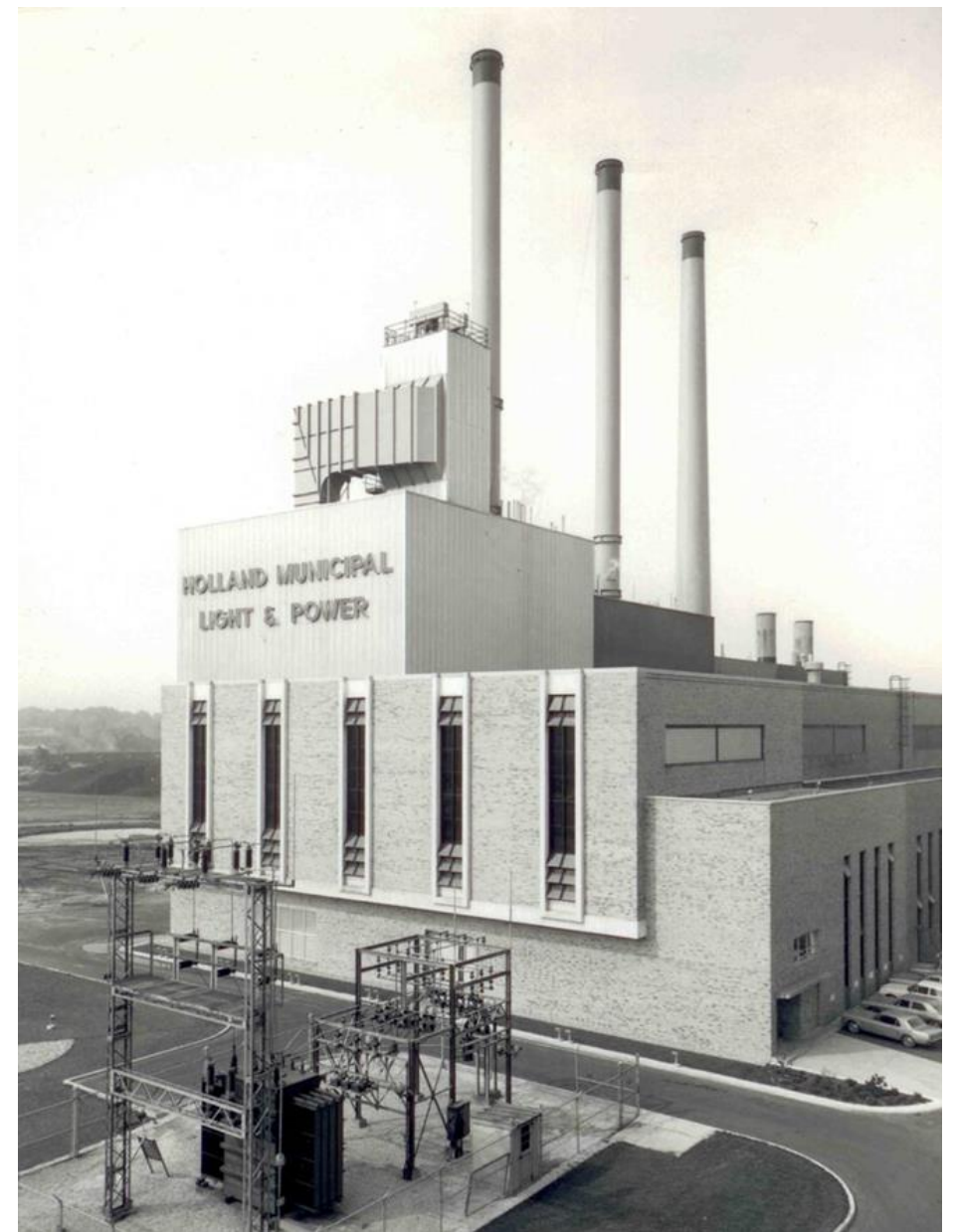
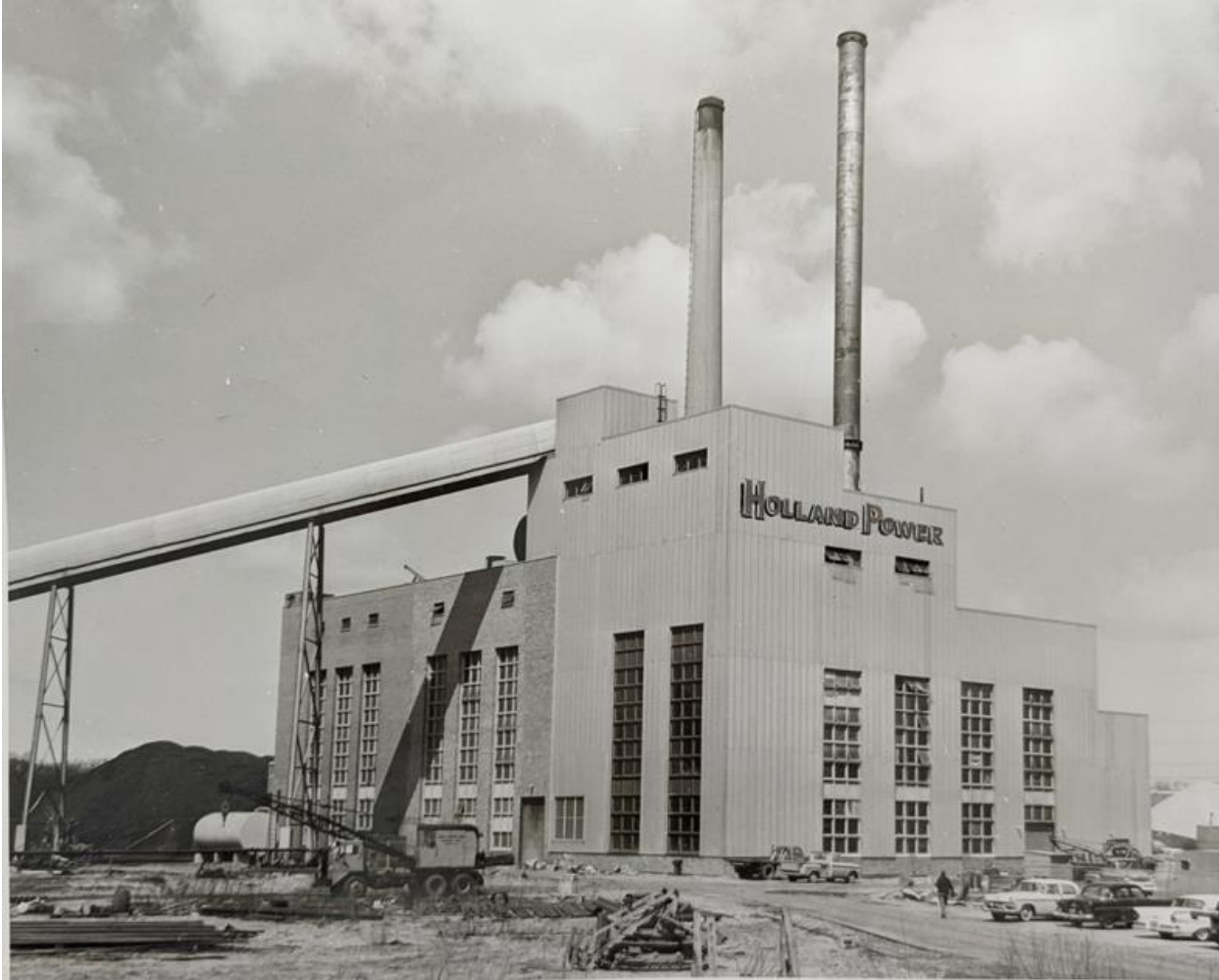


- Holland's new plant is constructed at a cost of \$1.5 Million
- The property is made available by reclaiming soils from the swampy shoreline
- As a result, the plant is built on deep piles

- 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 its 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

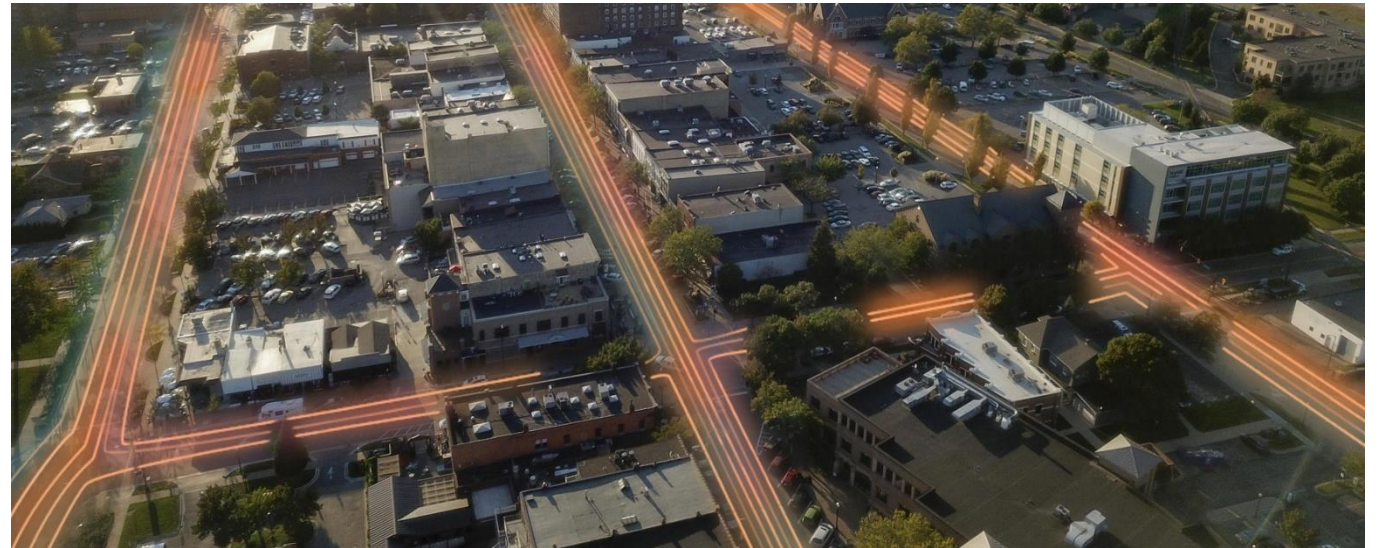
Snowmelt System

- First portion installed in 1988 downtown improvement project (3 Blocks)
- ~800,000 sq ft of heated streets and sidewalks (4.9 miles)
- Largest publically 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

CHOOSING A PATH FORWARD

2007-2013

2006-2007: New Generation Needs



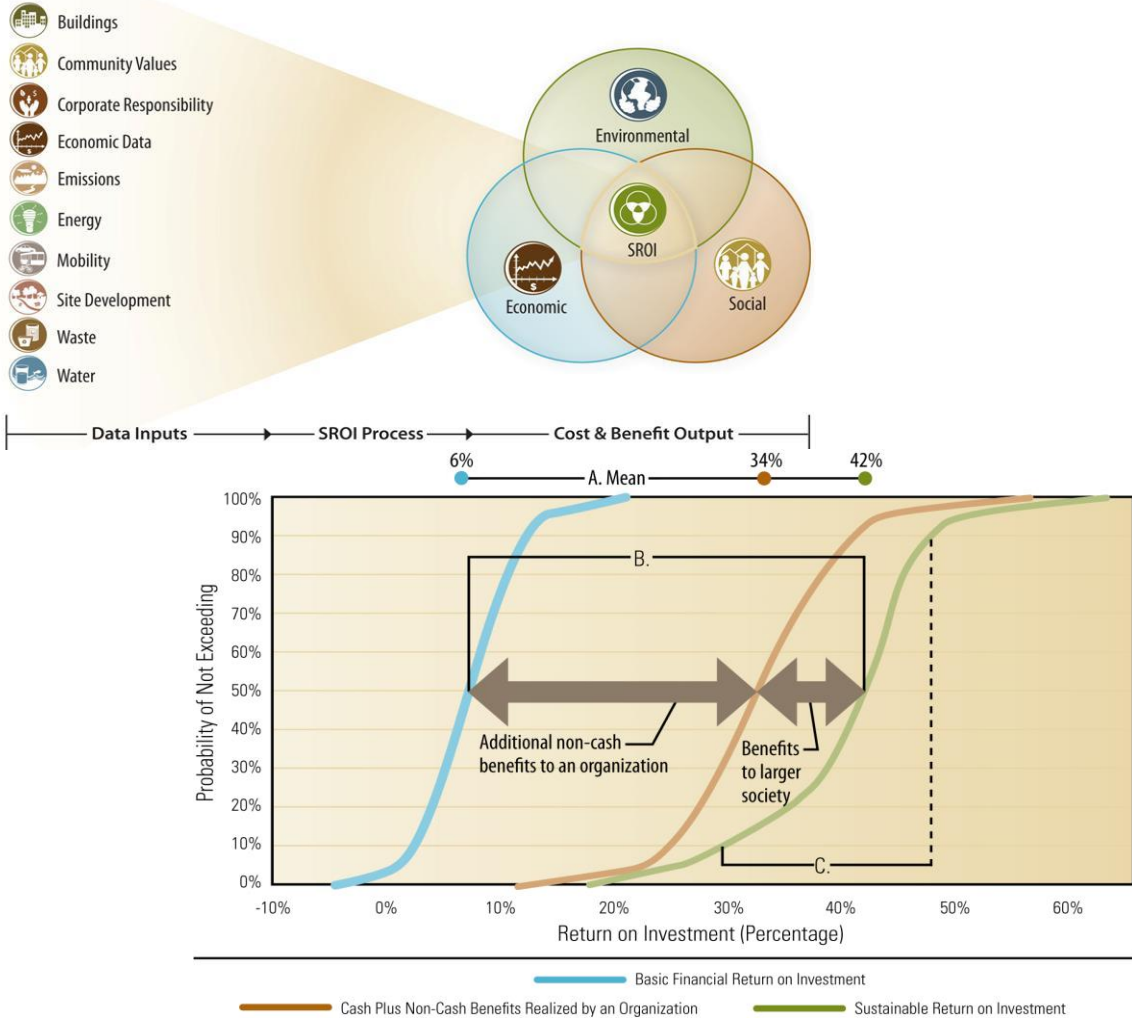
Growing energy demand in Holland prompts HBPW to pursue expanding generation at the James DeYoung coal power plant.



Jun-Aug 2008:
Exploring Generation
Options

A NEW ERA EMRGES

Holland Energy Park (HEP)



Power **P²¹**
FOR THE 21ST CENTURY.



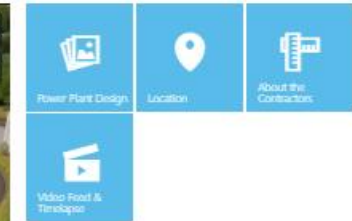
We are committed to building a reliable power infrastructure for the Holland, MI community that is socially, economically and environmentally responsible.

WHAT'S HAPPENING RIGHT NOW WITH P21? (VIEW ALL)



New Power Plant Architectural Design

Learn About Holland Energy Park



A NEW ERA EMRGES

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

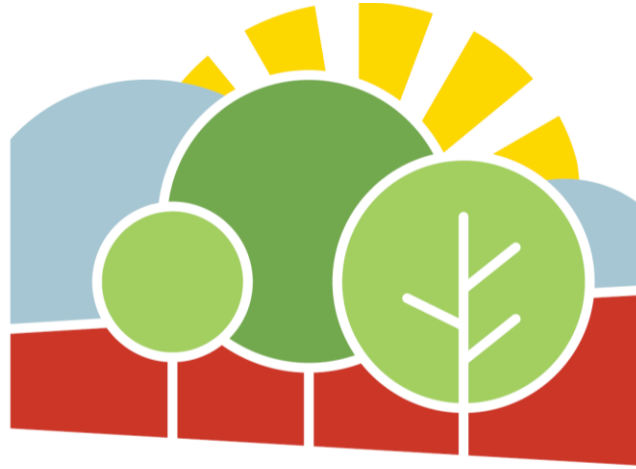


BENEFITS OF PUBLIC POWER

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





HOLLAND

ENERGY PARK

****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



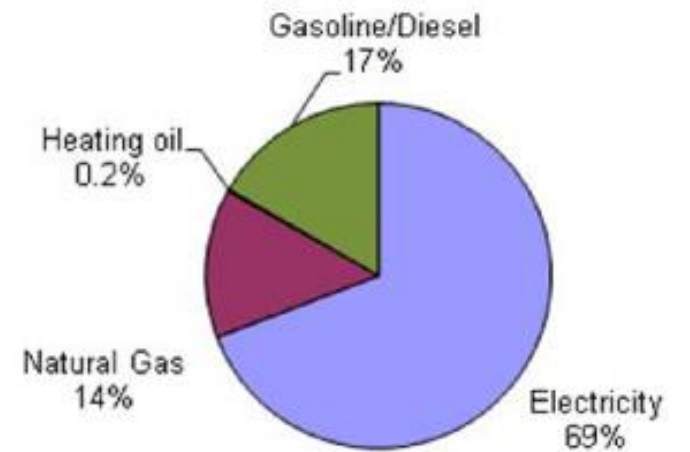
COMMUNITY ENERGY PLAN

Key Metrics (2011)

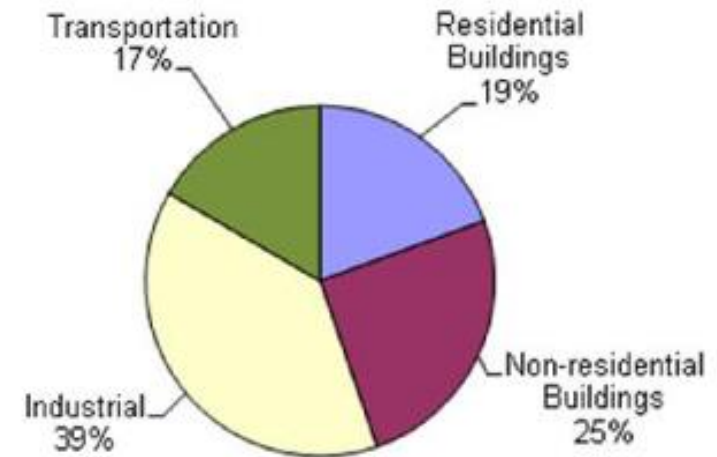
24 metric tons
CO_{2e} per capita (in 2010)

GOAL = 10 metric tons
CO_{2e} per capita (by 2050)

- 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 CO_{2e} per capita by 2050



by type



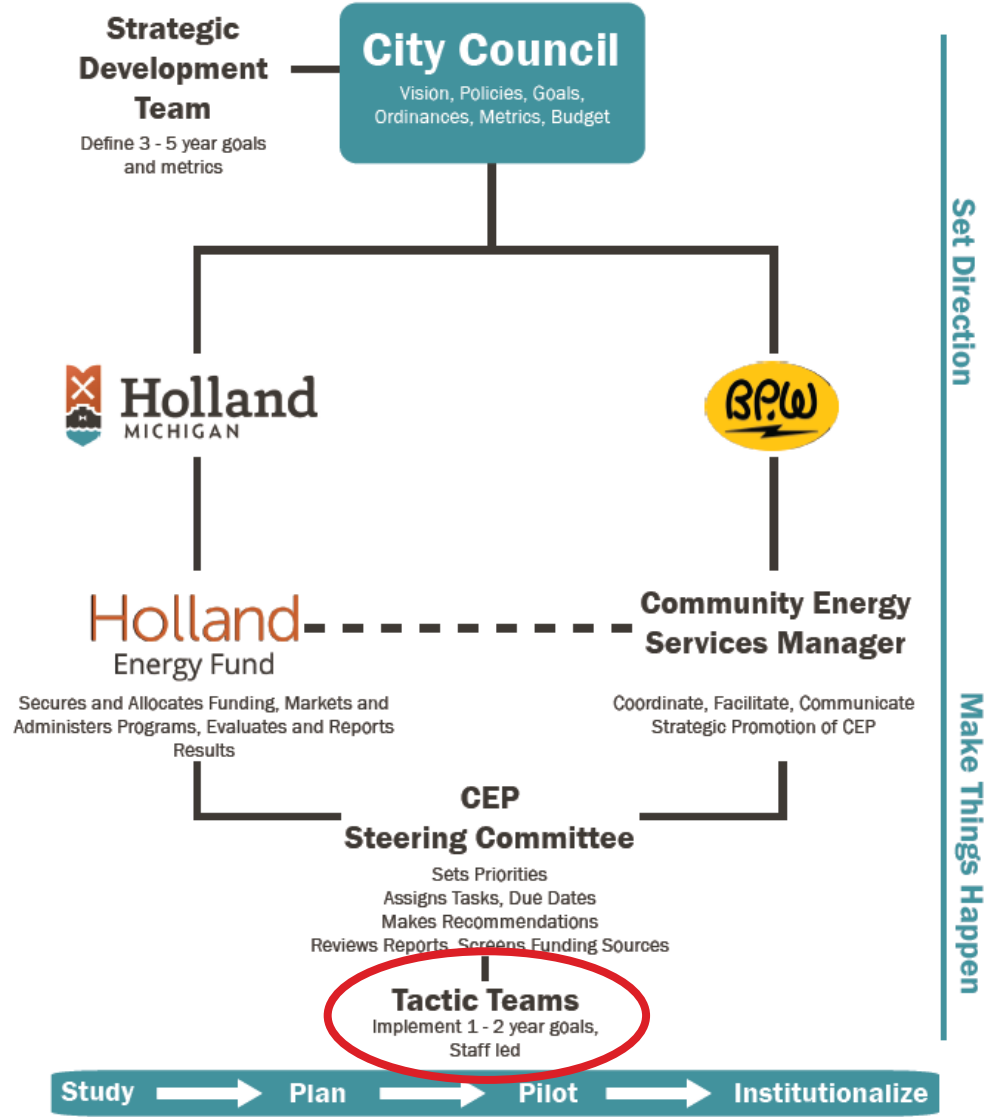
by sector

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)



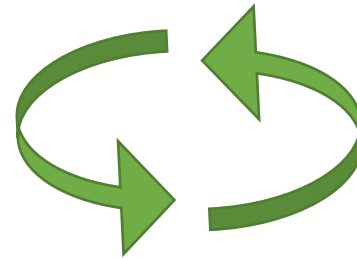
On-Bill Loan Enabling Legislation (PA 408)



Holland Energy Fund – 501(c)3

Home Energy Retrofit (HER) Program

Holland On-Bill Loan program



Holland
Energy Fund

City's share of
OBL/HER project cost
(2019-2021)
 $\leq \$10.00/\text{kWh saved}$



City's share of
OBL/HER project cost
(2016-2018)
 $\leq \$2.00/\text{kWh saved}$

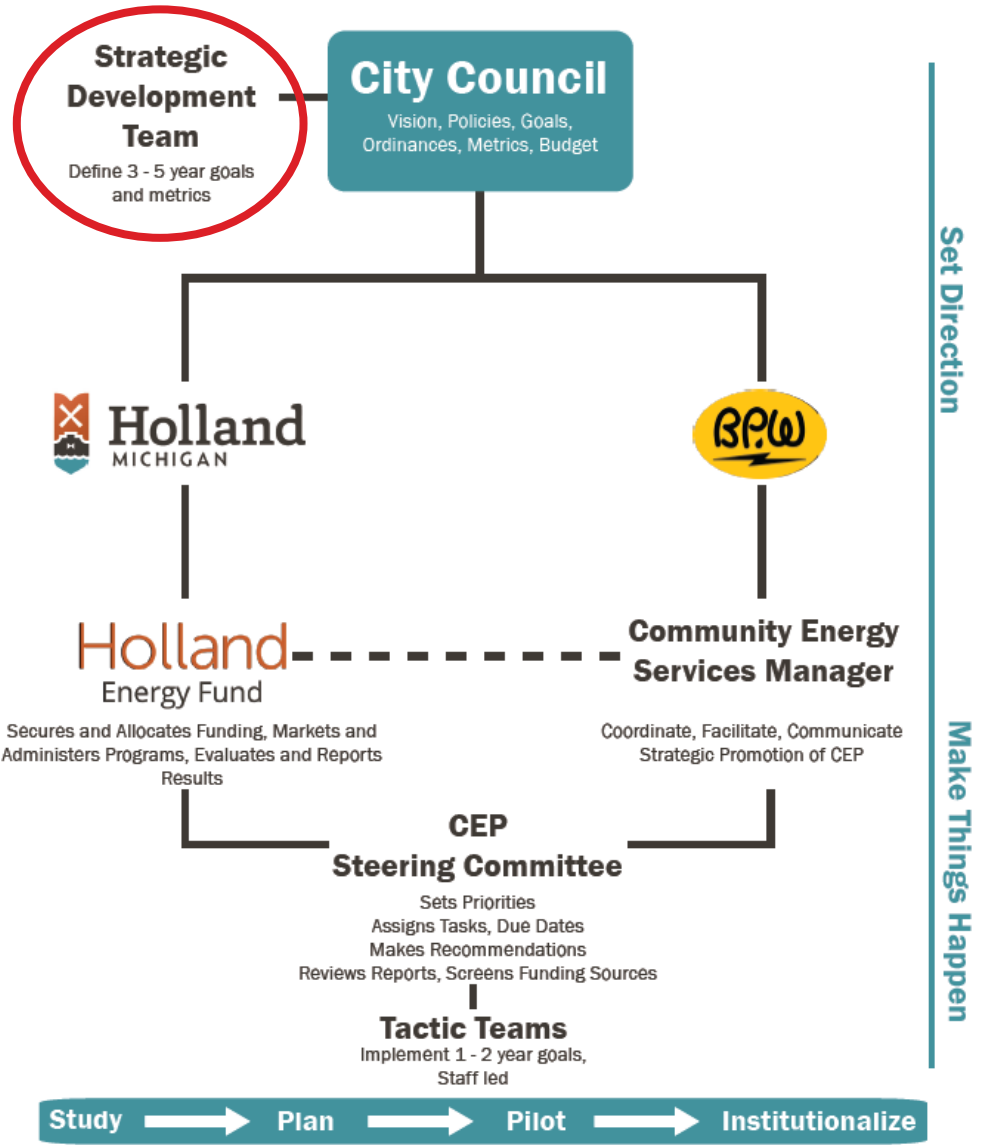


BPW's cost of an
average EWR rebate
 $= \$0.10/\text{kWh saved}$



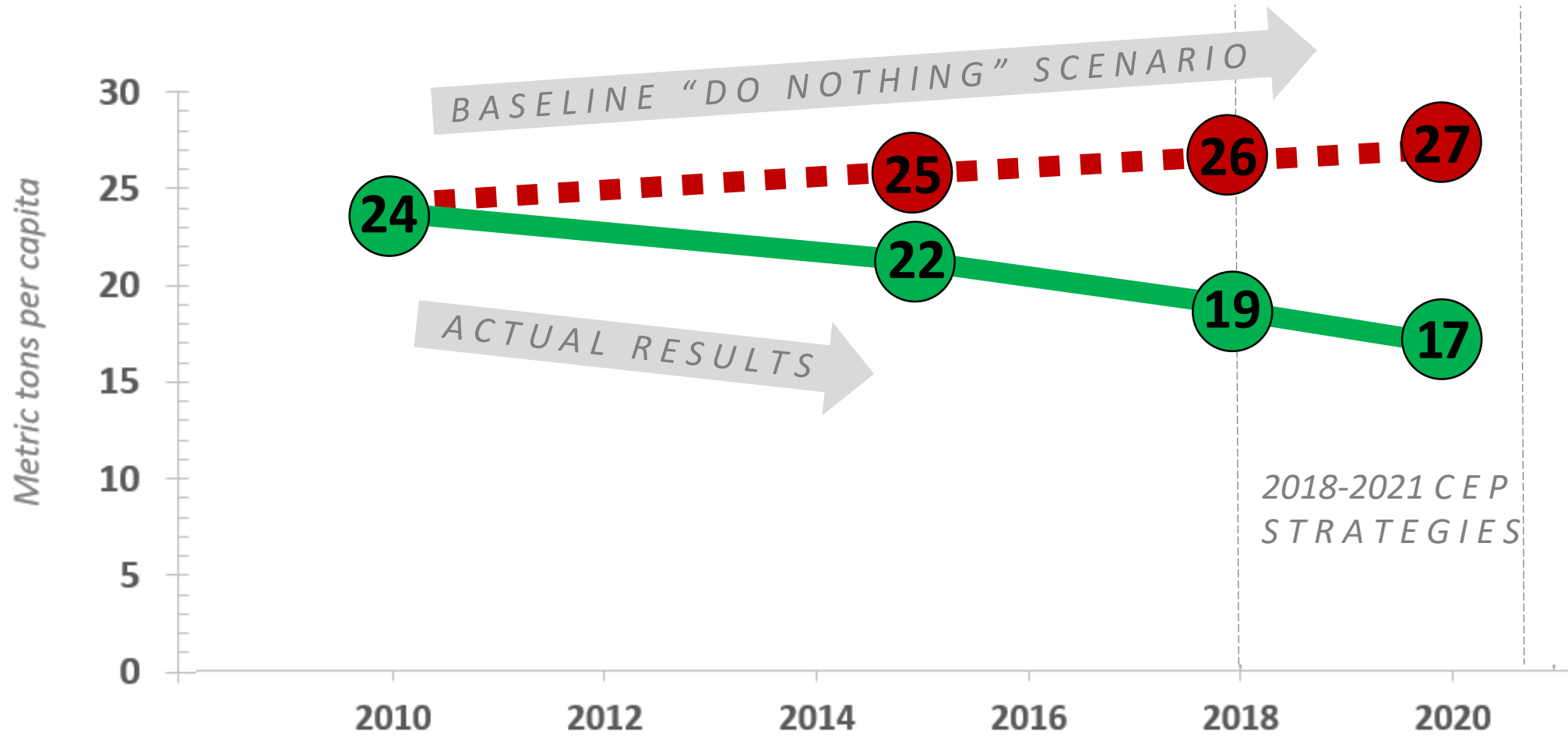
REFINING THE STRATEGY
2018 Strategic Development Team

- 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



REFINING THE STRATEGY (AGAIN)

2020-2021 Strategic Development Team

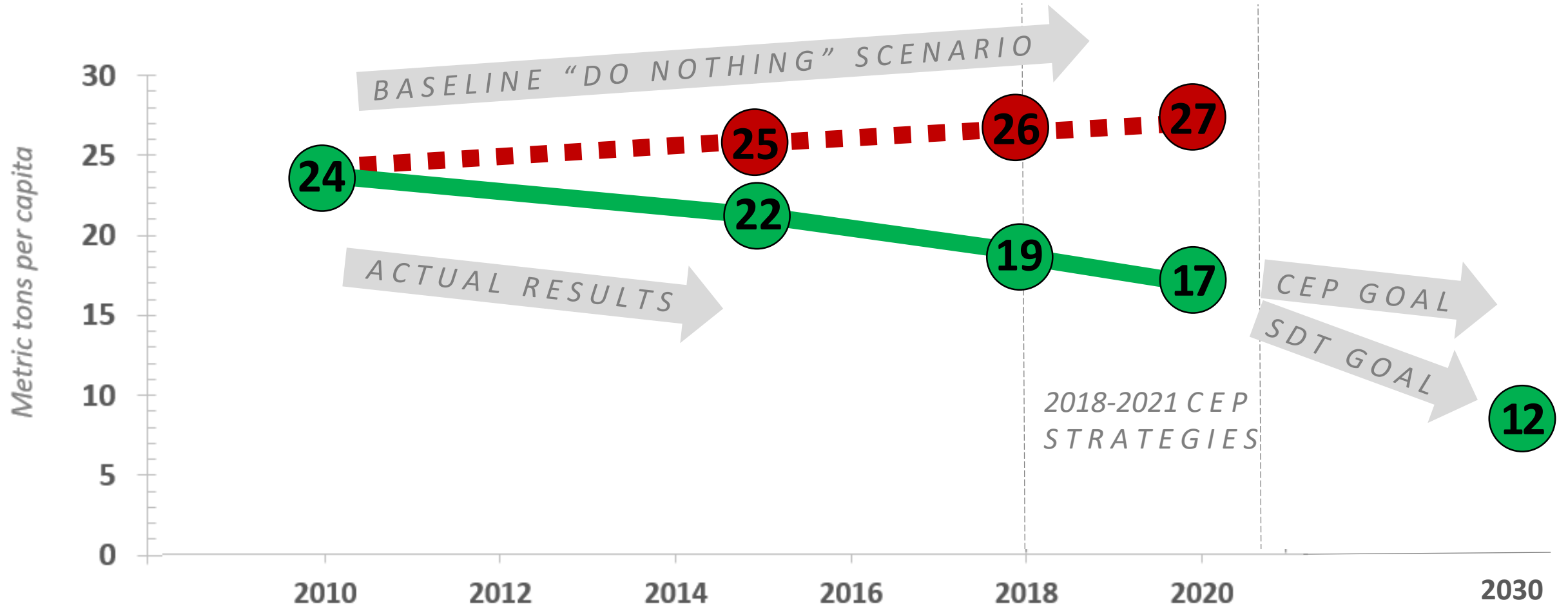


1. Electric Portfolio
2. Building Energy Consumption
3. Transportation
4. Education
5. Offsets

- *Targets and Strategies for each lever*
- *CEP Steering Committee prioritizes which strategies to address first*

MOVING THE GOALPOSTS

New Carbon Goal by 2030



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



BPW LOCAL. RELIABLE. EFFICIENT. ESSENTIAL.

Elective Renewable Energy Rate

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

Reduce your carbon footprint!

- 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% renewables!

Participation requirement: 12 month minimum

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

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



*Heat Pump
Water Heater*



Holland
MICHIGAN

Sustainability

History

City of Holland & Holland Board of Public Works Sustainability Timeline														
Pre 2009 (+)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	Michigan Public Power Agency (MPPA) Landfill Gas Project authorized	Holland Sustainability Committee Formed	Garforth International commissioned	BPW P21 Power	America in Bloom Outstanding Achievement Award: Environmental Effort	Urban Tree Canopy Assessment Completed	City cosponsors Living Sustainably Along the Lakeshore	Ground Broken on Holland Energy Park	James DeYoung Coal-fired Power Plant Decommissioned	Holland Energy Park Commercial Operation	Urban Tree Canopy Assessment Completed by Hope College	Power Purchase Agreement with Assembly Solar II authorized	City begins Sustainability Partnership with ODC Network	City hires first full-time Sustainability Manager
	HBPW hires first Conservation Programs Manager (later known as Community Energy Services Manager)	HBPW begins Energy Waste Reduction program	GHG baseline assessed	CEP Adopted	CEP Task Forces Mobilized	District Energy Study	Holland Hope College Sustainability Institute is formed	America in Bloom Overall Winner	Home Energy Retrofit Program is launched	Project Clarity is Launched	Power Purchase Agreement with Assembly Solar I authorized	HBPW and City begin Energy Saving Trees program	City implements Hybrid/Electric Vehicle Purchasing Policy	City launches new recycling cart program
		Energy Conservation & Efficiency Plan for City Facility & Operations	Power Purchase Agreement with North American Natural Resources (landfill gas) executed		Holland Energy Park Combined Cycle Natural Gas Plant Approved	Holland Energy Park site selected	PA 408 signed into law allowing on-bill financing	Home Energy Retrofit pilot program conducted on 25 homes	City/BPW complete LED Pedestrian Lighting Retrofit	Power Purchase Agreement with Pegasus Wind Farm authorized	Power Purchase Agreement with Invenergy Solar authorized		Holland PD purchase Tesla for EV pilot program	Power Purchase Agreement with Hart Solar authorized
					Power Purchase Agreement with Wildcat Wind Farm executed	Power Purchase Agreement with Beebe Wind Farm authorized	Georgetown University Energy Prize Competition	Holland Energy Fund incorporated	America in Bloom Outstanding Achievement Award: Environmental Effort	Adoption of City Master Plan with Visionary Elements	Holland Energy Park Education Center opens		Ground Broken on Anaerobic Digester with Combined Heat & Power at Water Reclamation Facility	Power Purchase Agreement with Calhoun Solar authorized
							HBPW Service Center achieves ENERGY STAR certification		On-Bill financing program is launched	Holland named semi-finalist in the Georgetown University Energy Prize Competition	City Hall, Police Dept. and Parks & Cemeteries Office receive ENERGY STAR Certification		Water Reclamation Facility receives "Utility of the Future Today" designation from Water Environment Federation	Adoption of Unified Development Ordinance (UDO) with large emphasis to implement the City Master Plan
									Municipal Buildings and Parks ESCO Retrofit	Holland Energy Fund wins Innovator of the Year in Governor's Energy Excellence Awards			HBPW purchases electric boom, idle-free bucket truck	
									Holland Energy Park wins Envision Platinum award from Institute for Sustainable Infrastructure					

Downtown Recycling



- 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

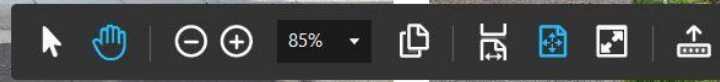
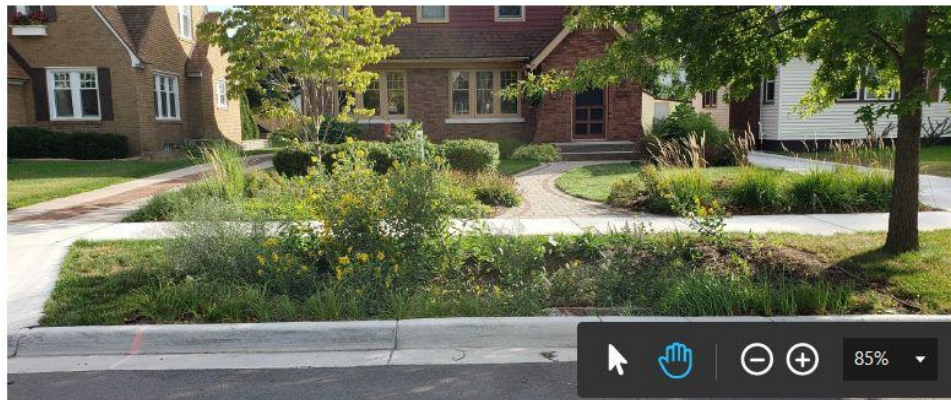


- The city purchases all recycling and waste bins made from 10% post consumer curbside recycling made locally at Cascade Engineering

Green Storm Water Infrastructure



Curb-cut Rain Gardens



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
5. 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.

Alternative Fuel Policy



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

Mi Sustainable Holland Articles



COLUMNS

MiSustainable Holland: Holland event to highlight sustainable business innovation

By Rose Spickler, West Michigan Sustainable Business Forum
Published 6:00 a.m. ET Feb. 7, 2022

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You could make an argument that the green building movement, and by extension the modern sustainability movement, began in Holland with the completion of the Herman Miller GreenHouse factory in 1995.

It was here that the standard for what would become a LEED building was set, and in the decades since, local businesses have played sustainability within their industries and the state company, Haworth, defined what it meant to have commitment for Michigan companies.

COLUMNS

MiSustainable Holland: Sustainability work earns 'gold' status for Holland

Isabel Stein, City of Holland
Published 6:00 a.m. ET June 27, 2022

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Challenge Gold Certification for the second year in a

LOCAL

MiSustainable Holland: Holland celebrates a year of sustainability success

Joe Sikma, ODC Network
Published 6:02 a.m. ET Jan. 3, 2022

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Monday, April 12.

Education

Sustainability Education Events

This Earth Day
PLANT NATIVE
with
ALLEGAN CONSERVATION DISTRICT and Innocademy
TREE SEEDLING SALE
FRIDAY APRIL 22, 2022
9 AM - 5 PM
Outdoor Discovery Center 4214 56th St, Holland, MI 49423
Indoor

DeGraaf nature center
May 17, 9-11am
May 24, 10am-12pm
Free!
Volunteer Rainscaping Training
Registration required

HERRICK DISTRICT LIBRARY
LIBRARY OF THINGS
Check **THINGS** Out at DeGraaf

House Plants 101:
Bringing the Outside In
DeGraaf nature center

Composting Workshop
DeGraaf nature center

Earth Day Activity Kit!

Biomimicry with Dana Lowell

West Michigan Sustainable Business Forum

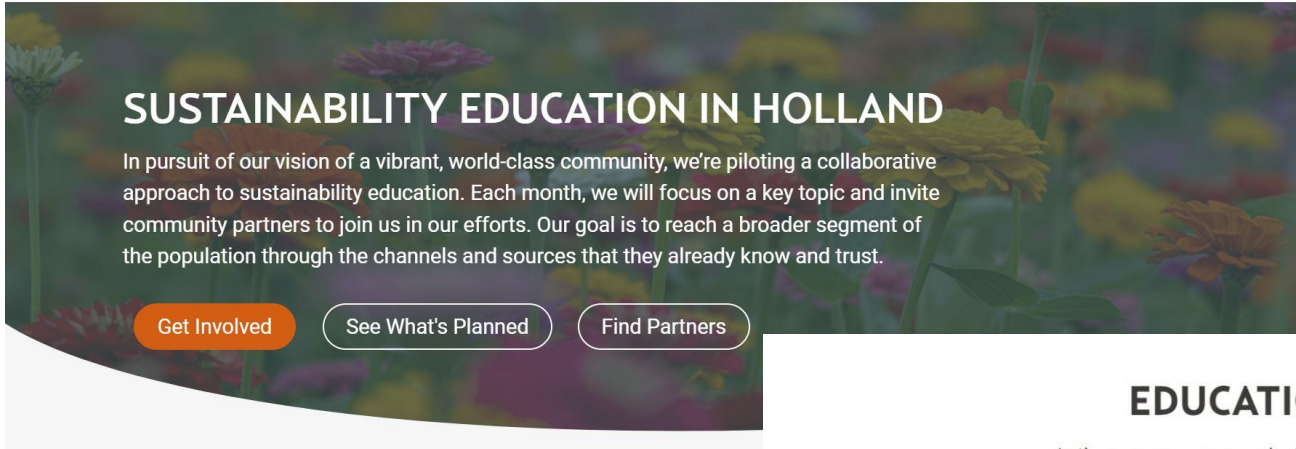
Education

[FAQ's](#) [Resources](#) [Contact](#)



#MiSustainableHolland Education Program

[Who](#) [What](#) [When](#) [Why](#)



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.

[Get Involved](#) [See What's Planned](#) [Find Partners](#)

EDUCATION PARTNERS

Is there a name or organization missing from this list? Let us know!



Dan Broersma, Sustainability Manger
Marianne Manderfield, Public Information
Coordinator



Andrew Reynolds, Community Energy
Services Manager
Emily Damaska, Conservation Program
Specialist
Barry Rutherford, Energy Efficiency Engineer
Julie DeCook, Communications Manager



Joe Sikma, Sustainability Manager
Kelly Goward, Watershed Manager
Dan Callam, Greenway Manager
Alexa Redick, VP of Marketing and
Communications



Michelle Gibbs, Director, Office of
Sustainability



Lynn McCammon, President
Sarah Kuiper, Secretary



Joe Sikma, Sustainability Manager
Sarah Irvin, Naturalist

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