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Tree Pittsburgh: Modular and Zero Energy on a Non-profit Budget

Tree Pittsburgh: Modular and Zero Energy on a Non-profit Budget

Danielle Crumrine, Executive Director, Tree Pittsburgh
Matt Plecity, Principal, GBBN
Tiffany Broyles Yost, Associate, GBBN (moderator)




Learning Objectives

1. Identify the challenges faced by non-profit organizations when constructing environmentally responsible buildings.
2. Learn how non-profit organizations can build a core strategy for funding sustainability through grants and alternative revenue streams.
3. Describe the owner, design and construction team strategy for achieving net-zero energy usage with a limited budget through the case study of Tree Pittsburgh.
4. Demonstrate cost saving and sustainability opportunities that modular construction presents and understand when it can be the right fit for a project.

About... TREE PITTSBURGH

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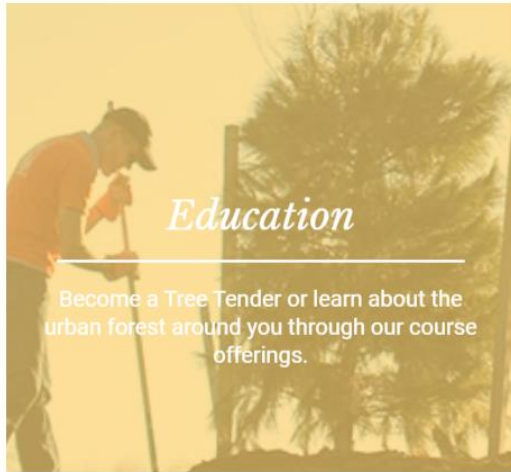
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Mission

Tree Pittsburgh is an environmental non-profit organization dedicated to enhancing community vitality by restoring and protecting the urban forest through tree planting and care, education, and advocacy.

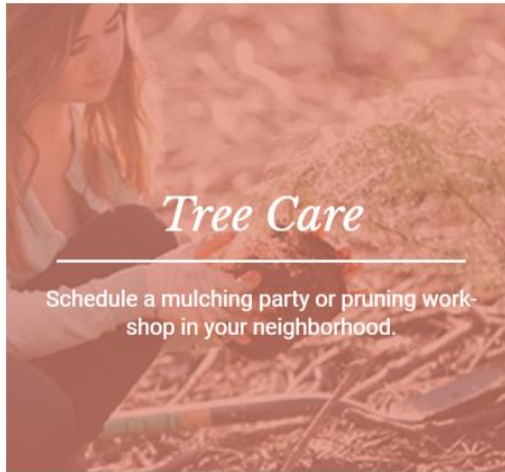
Vision

Our vision is to create a healthy urban forest for all by inspiring and engaging people to maintain, plant, and protect trees. We believe that all people have the right to benefit from the many health, environmental, and social benefits that trees provide. A greener city will create more vital communities for generations to come.



Education

Become a Tree Tender or learn about the urban forest around you through our course offerings.



Tree Care

Schedule a mulching party or pruning workshop in your neighborhood.



Neighborhoods

Learn more about Tree Pittsburgh's neighborhood-level planning.

Education + Advocacy



Neighborhood Plantings





Operations

Operations



Location



Site Conditions



Site Conditions



Site Conditions





Summary of Act 2 of 1995: Land Recycling and Environmental Remediation Standards Act

The primary goal of Act 2 is to encourage the voluntary cleanup and reuse of contaminated commercial and industrial sites. This strategy of encouraging the redevelopment of sites with existing roads, sewers, water lines, and utilities is often more cost-efficient than building new infrastructure. The strategy also helps to preserve undeveloped farmland, forests, and open areas for future generations.

General Provisions

Act 2 provides incentives to promote the voluntary remediation and development of contaminated properties. Act 2 is composed of four cornerstones that overcome redevelopment obstacles: uniform cleanup standards, standardized reviews and time limits, liability relief, and financial assistance. Clear, uniform cleanup standards, standardized review procedures, and time limits provide the predictability redevelopers need to consider projects. Relief of liability for the contamination after a site meets the standards provides owners and developers with certainty. Financial assistance promotes the assessment and remediation at abandoned sites.

Other general provisions:

- Cleanup is based on the actual risk that contamination on a site poses to public health and the environment.
- Act 2 established the Cleanup Standards Scientific Advisory Board to help the Department of Environmental Protection's (DEP's) Environmental Quality Board develop statewide health standards and provide advice on other technical and scientific matters.
- The environmental remediation standards established under Act 2 are used when any site is remediated voluntarily or when remediation is required under the Clean Streams Law, the Air Pollution Control Act, the Solid Waste Management Act, the Infectious and Chemotherapeutic Waste Law, the Hazardous Sites Cleanup Act, or the Storage Tank and Spill Prevention Act.

Remediation Standards and Review Procedures

Anyone who wants to take advantage of the liability protection provided in Act 2 must remediate their site as a special industrial area or select and attain compliance with one or any combination of the following three environmental standards:

- Background standard
- Statewide health standard
- Site-specific standard

Background Standard

A person choosing to clean up a site to the background standard must document that the concentration of any contaminants remaining do not exceed background conditions. This applies to a site that is affected by a release or where contamination migrates to the site from a nearby source.

Statewide Health Standard

Regulations have established statewide health standards for contaminants in each environmental medium (soil, groundwater, etc.). These medium-specific chemical concentrations are based upon acceptable cancer and systemic health risks. The standards account for used and unused groundwater, as well as residential and nonresidential exposure factors at a site.

Site-Specific Standard

This standard allows the remediator to consider the unique conditions of a site to establish cleanup levels appropriate for its intended use. This approach is a more detailed process that may involve developing a risk assessment based on the conditions and human exposures at the site.

Special Industrial Areas

This approach allows for limited remediation based in part upon the proposed reuse of the property. To qualify for this status, a site must either have no financially viable responsible person or be in an Enterprise Zone, which includes all Keystone Opportunity Zones. The party conducting the cleanup must not have caused or contributed to the site contamination and must perform a remedial investigation. Cleanup actions must address all immediate, direct or imminent threats, and other environmental contamination based on the intended use of the site.

Public Involvement

For background and statewide health standard cleanups, notices must be submitted to DEP and the municipality (where the site is located) and published in a local newspaper when the responsible person intends to clean up a site and when they believe the cleanup is complete. For the site-specific standard and special industrial area cleanups, in addition to the previous notices, a public involvement plan must be developed if requested by the municipality. People doing cleanups are encouraged to develop a proactive approach to working with the municipality in developing and implementing remediation and reuse plans.

Cleanup Liability Protection

Any person demonstrating compliance with one or a combination of the cleanup standards is relieved of further liability for the remediation of contamination identified in reports submitted to and approved by DEP. The cleanup liability protection provided applies to:

- Current and future owners of the property.
- Any other person who participated in the remediation of the site.
- A person who develops or otherwise occupies the site.
- A successor or assign of any person to whom the liability protection applies.
- A public utility to the extent the utility performed activities on the site.

The owner or developer of a special industrial area has limited liability and is only responsible for remediation of immediate, direct or imminent threats, and any other remediation specified in the special industrial area agreement between them and DEP.

Industrial Sites Reuse Program

One of the cornerstones of the Land Recycling Program is providing financial assistance to encourage voluntary investigation and remediation activities at abandoned industrial sites. This financial assistance is performed under the Industrial Sites Reuse Program. This program provides grant or loan money for assessment and remediation for up to 75 percent of the cost of the activity to persons who did not cause or contribute to contamination on the site. The Department of Community and Economic Development administers the Industrial Sites Reuse Program.

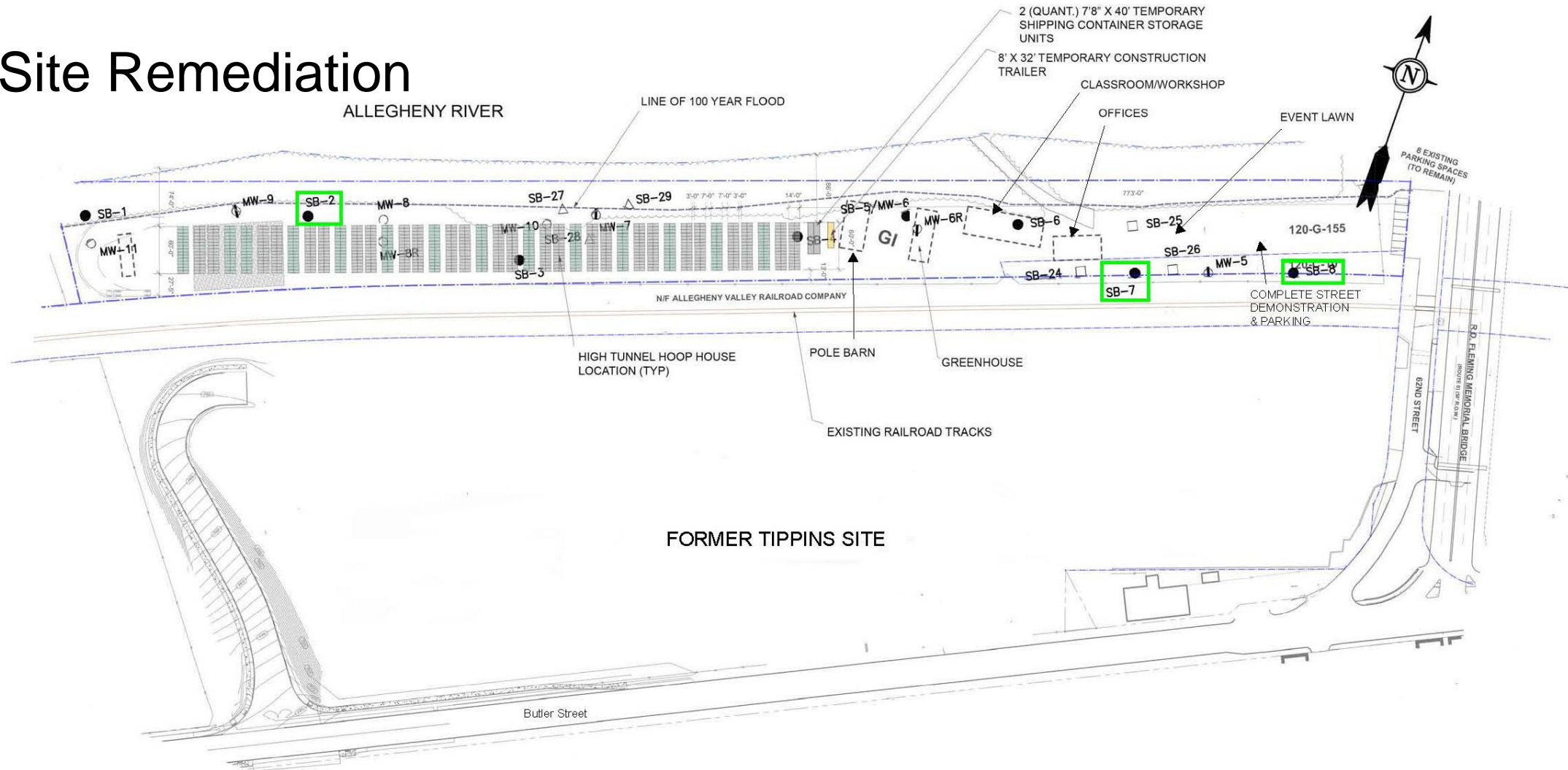
Miscellaneous Provisions

- State or local permits are not required for remediation activities undertaken under the requirements of this act.
- Changing land use from nonresidential may require further cleanup and DEP concurrence that the site has been rendered safe for residential use.

Contact Information

For information on this initiative or general information on the Land Recycling Program call 717-783-1566 or visit www.dep.pa.gov, under Businesses > Land > Land Recycling. Questions and comments should be sent to landrecycling@pa.gov.

Site Remediation



Sample exceeds Pennsylvania Act 2 non-residential Medium-Specific Concentration (MSC)

LEGEND:	
CEC SAMPLING POINT (2002)	SB-1 ●
MONITORING WELL	MW-9 ○
SHALLOW BORE HOLE TO DELINEATE PCB'S	SB-26 □
STANDPIPE TO DELINEATE MW-7 CONTAMINANTS	SB-28 ▲

Note: Structure locations are approximate.
 Sources: GAI Consultants, Figure 2, Sample Location Plan, 62nd Street Industrial Park, City of Pittsburgh, Allegheny County, PA;
 Pfaffmann & Associates, A1.0, Site Layout Plan

Site Remediation



March 30, 2017

Martin Kaminski, Director
Urban Redevelopment Authority of Pittsburgh
200 Ross Street
Pittsburgh, PA 15219

Re: Baseline Environmental Report Addendum Approval
62nd Street Industrial Park-North Area
eFACTS PF# 731846
eFACTS Activity #41424
LRP# 5-2-1-19261
10th Ward, Lawrenceville Neighborhood
City of Pittsburgh, Allegheny County

Dear Mr. Kaminski:

The Department of Environmental Protection (DEP) reviewed the document titled "Consent Order and Agreement and Supplement to the Revised Baseline Environmental Report Addendum," (Report) for the property referenced above. The Report was prepared by Civil & Environmental Consultants, Inc. and submitted to DEP in accordance with the Land Recycling and Environmental Remediation Standards Act (Act 2).

DEP hereby approves the Revised Baseline Environmental Report Addendum in accordance with the provisions of Act 2.

This project is a Special Industrial Area as defined by Title 25, Chapter 250, Subchapter E, §250.502.

Act 2 requires that the Department and the person undertaking the reuse of a special industrial area enter a Consent Order and Agreement based on the Baseline Environmental Report which outlines the cleanup responsibility for the property. The Department is currently reviewing the draft COA submitted to the Department.

Thank you for your cooperation in working with DEP in the remediation of this site. If you have any questions or need further information regarding this matter, please contact Edward Bates by e-mail at ebates@pa.gov or by telephone at 724.925.5405.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin Halloran".

Kevin Halloran
Environmental Program Manager
Environmental Cleanup and Brownfields Program

cc: Tree Pittsburgh - Danielle Crumrine, Executive Director
Civil & Environmental Consultants, Inc. - Jennifer A. Ewing, P.G.

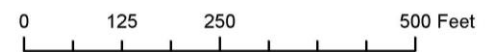
Southwest Regional Office
400 Waterfront Drive | Pittsburgh, PA 15222 | 412.442.4000 | www.dep.pa.gov

Site Remediation

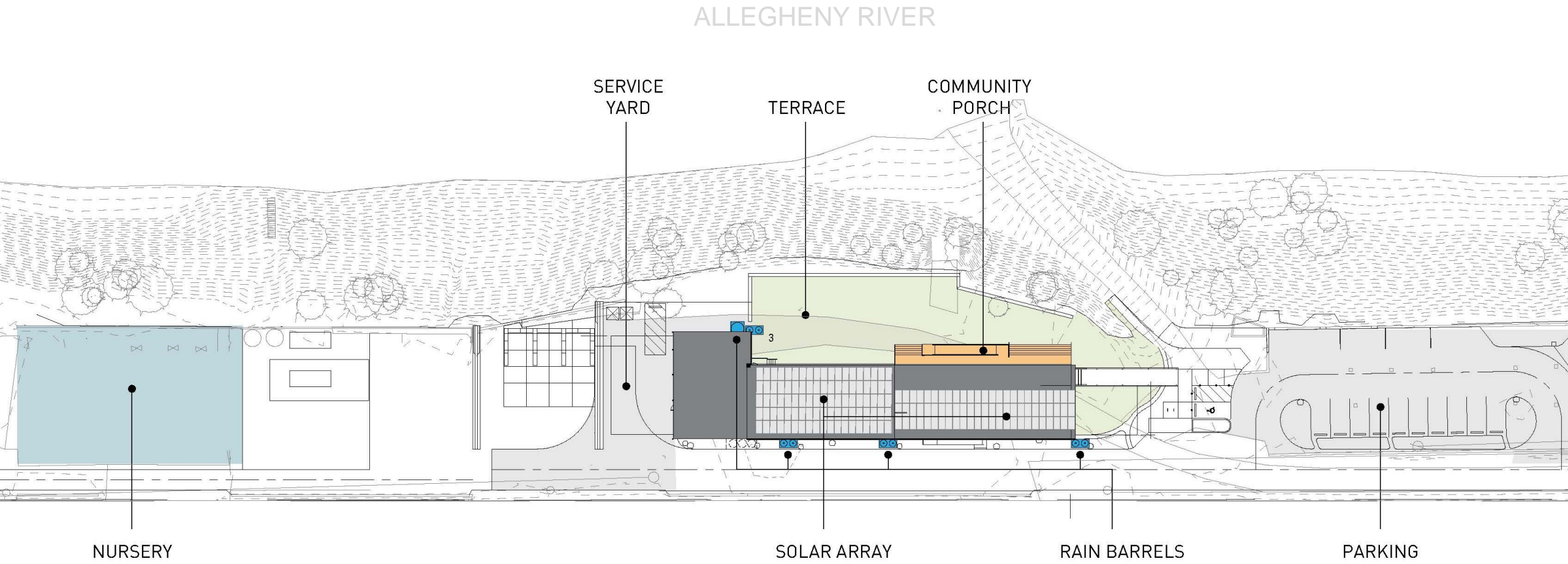


Legend

- Existing Trees
- Restoration_Trees



Flexibility + Mobility



A Place for People



Funding Streams + Grants

Funds Raised to date	
Richard King Mellon Foundation	
Colcom Foundation	
Allegheny Foundation	
Anonymous	
Hillman Foundation	
PA DCED Industrial Sites Reuse Program	
Green Mountain Energy	
Pittsburgh Shade Tree Commission	
Succop Family Foundation	
Benter Foundation	
Penelec Sustainable Energy Fund	
Duquesne Light	
Tippins Foundation	
ALCOSAN	
Pittsburgh Water and Sewer	
Fine Foundation	
Double Eagle Foundation	
Henry Simonds Foundation	
Clapp Foundation	
Individuals	
	\$2,916,500



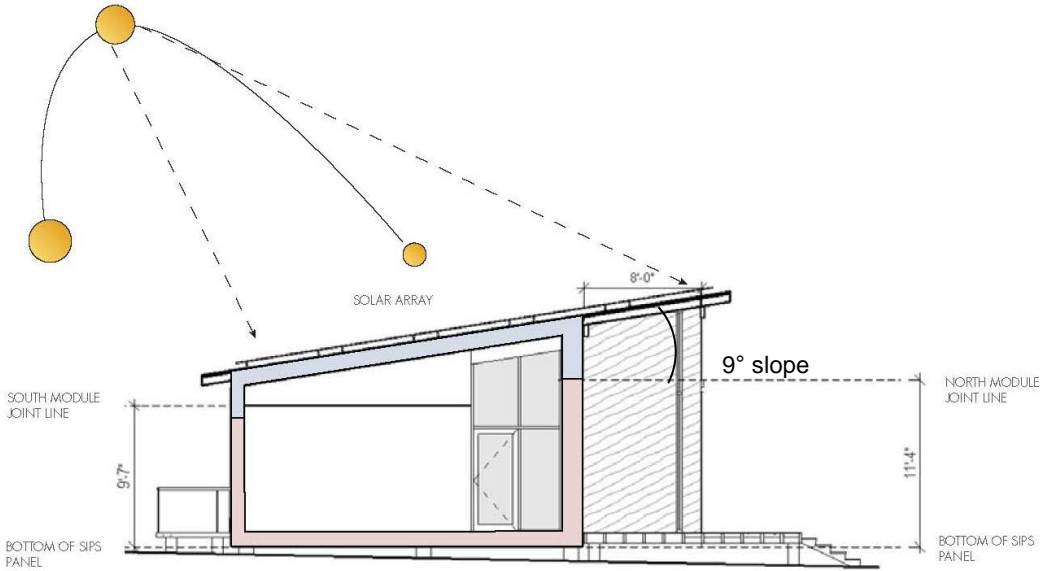
Project Cost

	Capital Budget	Actual 2-1-19	Variance
LAND			
Site Prep & Excavation	\$ 185,485	\$ 311,554	\$ (126,069)
Infrastructure	\$ 468,820	\$ 328,686	\$ 140,134
Other: Phtovoltaics	\$ 161,793	\$ 146,000	\$ 15,793
BUILDING			
New Construction	\$ 1,426,755	\$ 1,497,294	\$ (70,539)
Other: Stormwater Cistern	\$ 17,900	\$ 17,900	\$ -
Total Building Costs	\$ 1,444,655	\$ 1,515,194	\$ \$275 SF (70,539)
TOTAL LAND & BLDG	\$ 2,260,753	\$ 2,301,434	\$ (40,681)
SOFT COSTS			
Engineering & Architectural	\$ 233,000	\$ 384,294	\$ (151,294)
Permit Fees	\$ 8,220	\$ 9,625	\$ (1,405)
Contingency	\$ 167,227		
SUB TOTAL B:	\$ 408,447	\$ 393,919	\$ 14,528
TOTAL A+B:	\$ 2,669,200	\$ 2,695,353	\$ (26,153)
ADMINISTRATIVE COSTS			
Legal & Financing Fees (Site Compliance)	\$ 130,800	\$ 112,545	\$ 18,255
Staff Time		\$ 100,883	\$ (100,883)
Site Operating Costs		\$ 1,940	\$ (1,940)
Campaign PR and Promotion		\$ 11,935	\$ (11,935)
TOTAL ADMINISTRATIVE COSTS	\$ 130,800	\$ 227,303	\$ (96,503)
TOTAL CAMPAIGN	\$ 2,800,000	\$ 2,922,656	\$ (122,656)

Balancing the Budget



Solar Array

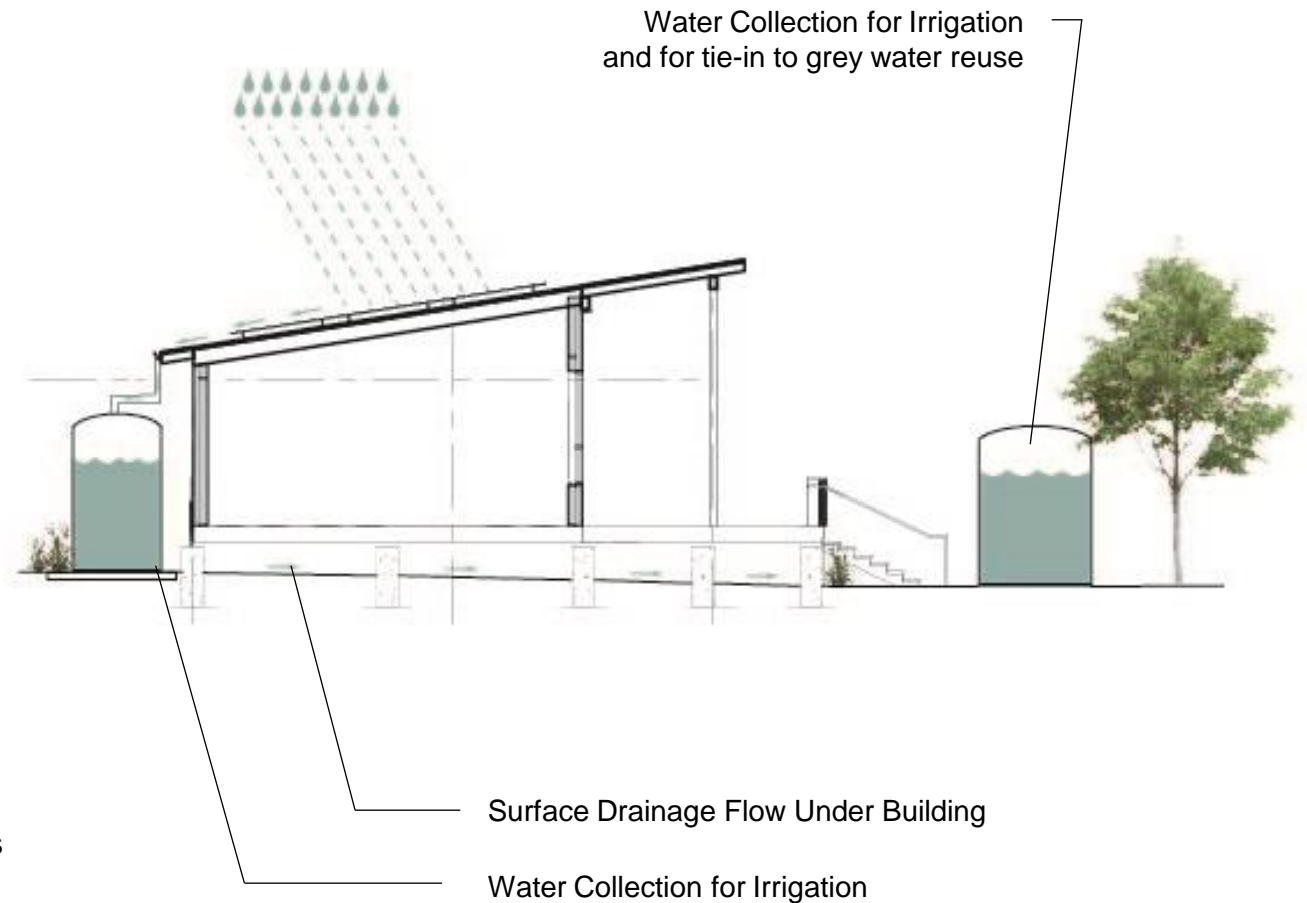


Green Drivers (both kinds of green)

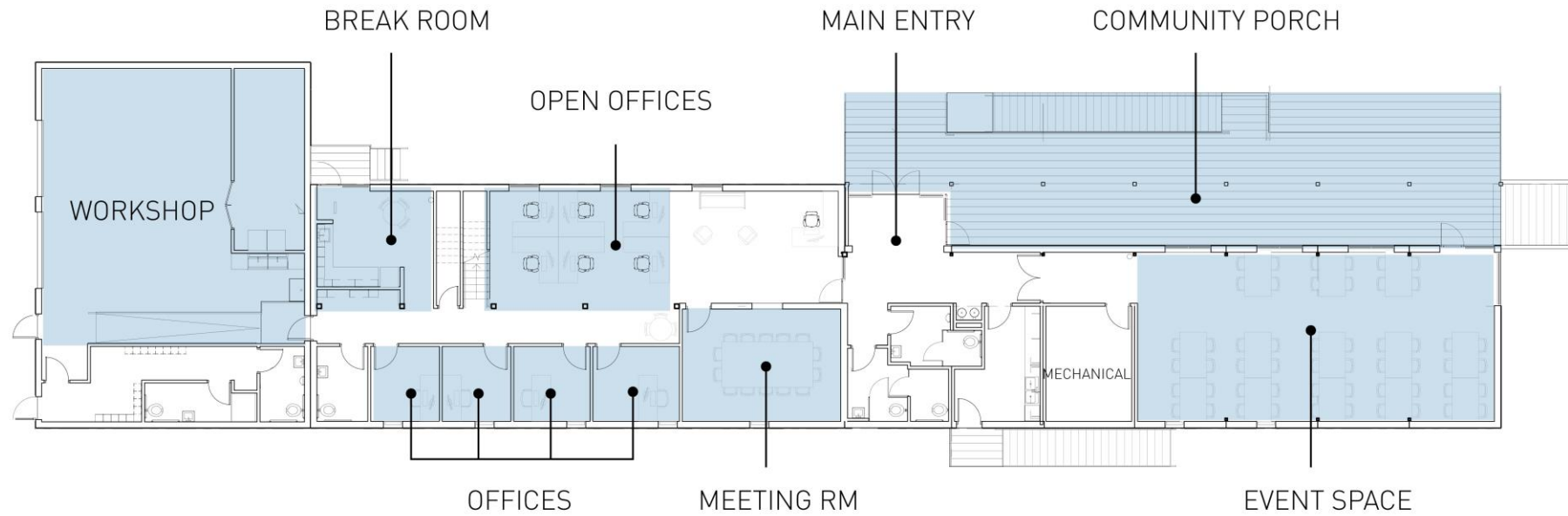


Sustainable Features:

- 100% Electricity generated by 60kw PV array
- 100% Roof Water Collection
- Low Flow and Waterless Plumbing Fixtures
- Triple Glazed Windows
- R 38 Wall R 50 Roof Insulation
- Zero on site construction waste for modules
- Ventilation Replacement Air through operable windows
- Seeking LEED Gold and IFLI Net Zero Energy Certification



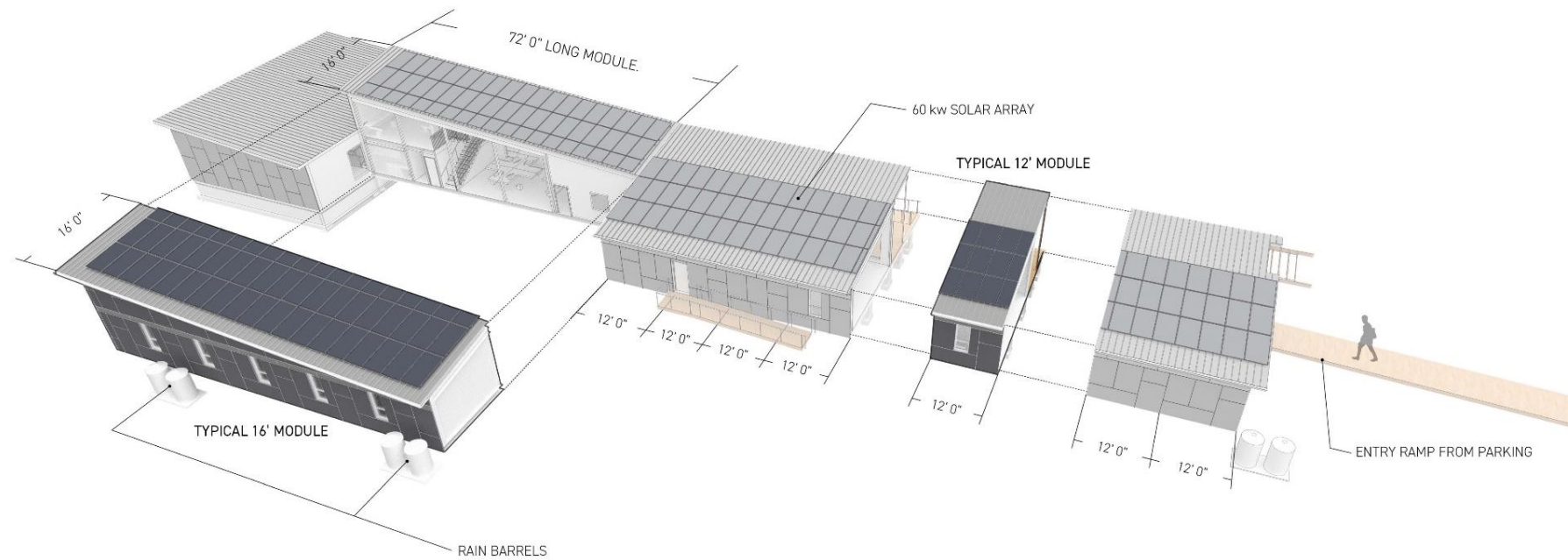
When a Plan Comes Together



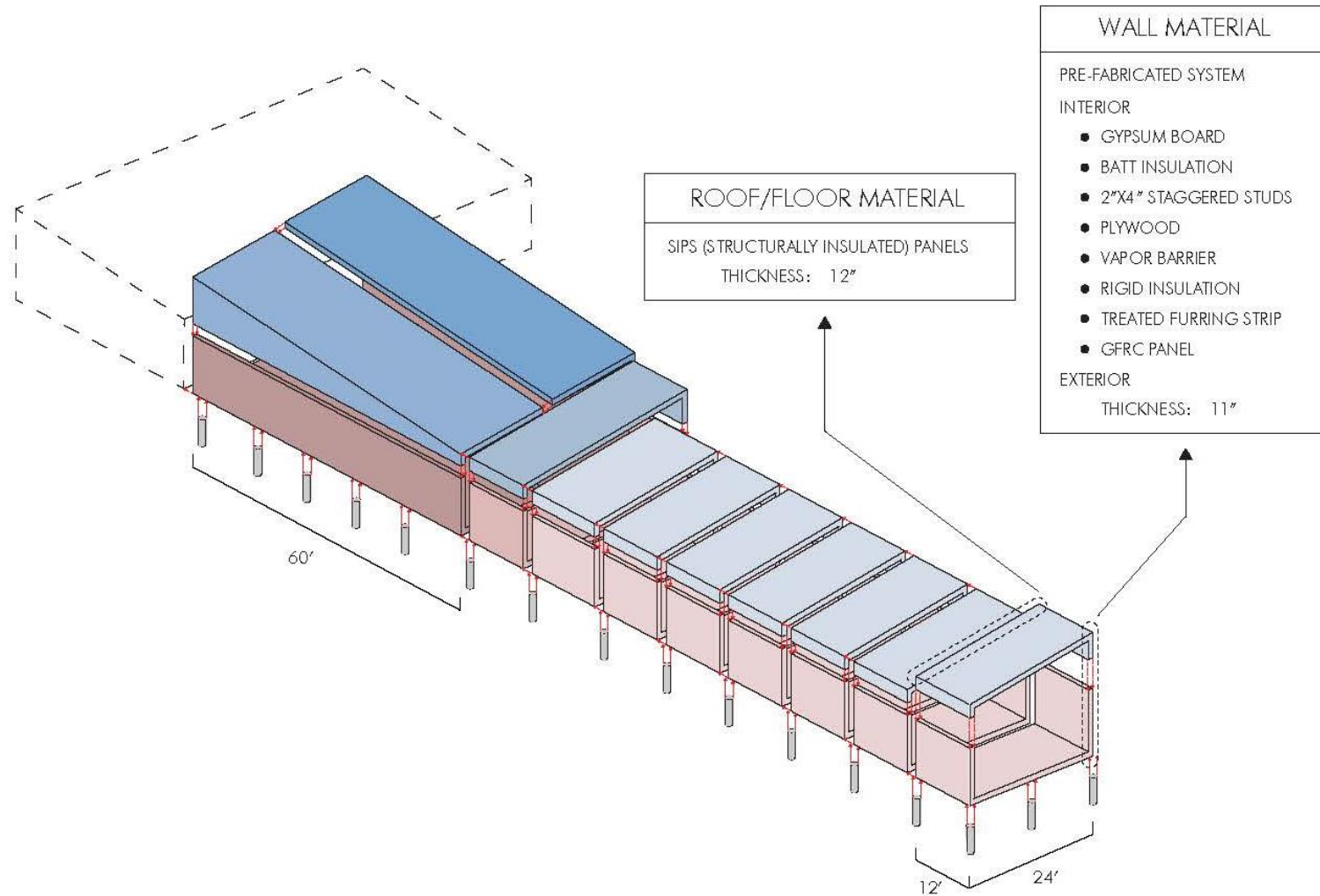
When a Plan Comes Together



Why Modular?



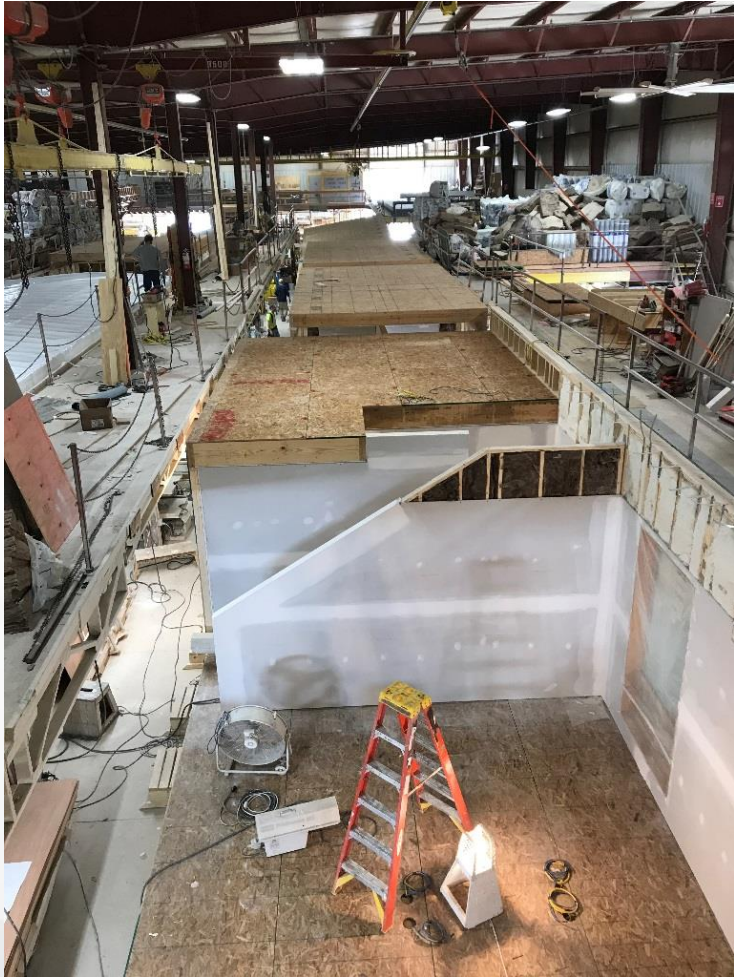
Why Modular?



Fabrication Process



Fabrication Process



Installation





Campus Plan

Entry point for learning and engagement

Teach all visitors about urban forestry and our work, whether or not they came here for that purpose. Motivate them to return and get involved.

Welcoming to all ages, identities, and abilities

Create spaces and signals throughout the site so that people feel welcomed, comfortable and empowered in their own skin and at their own level of ability.

Serendipitous + Inspiring

Allow visitors to explore the hidden gems of the site outside of curated programming.

Impactful + Expressive

Show the story of our work with demonstration areas and hands on experiences that engage and inspire visitors, partners, and staff.

Accessible + Safe

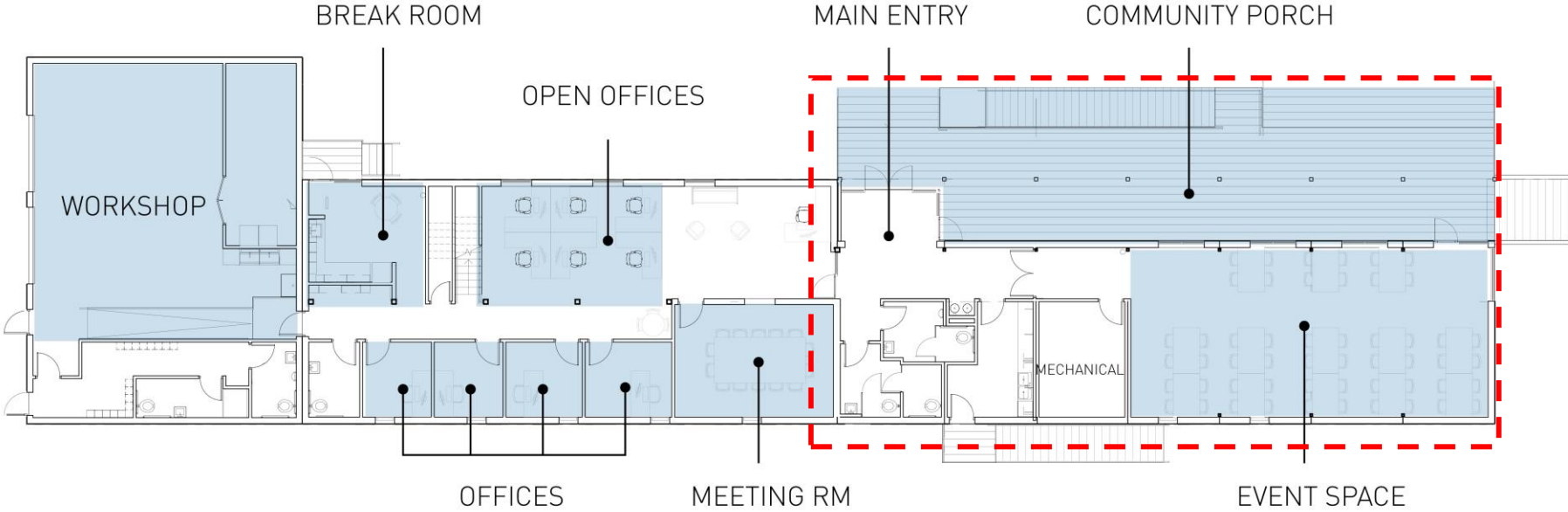
Ensure connectivity between destinations on the campus for people with disabilities. Identify and communicate restricted vs. open-access zones.

Efficient + Functional

Design back-of-house work areas to reduce staff burden, create operational efficiencies, and improve day-to-day experiences for staff.

Tree Pittsburgh Campus Visioning and Playbook

Layout



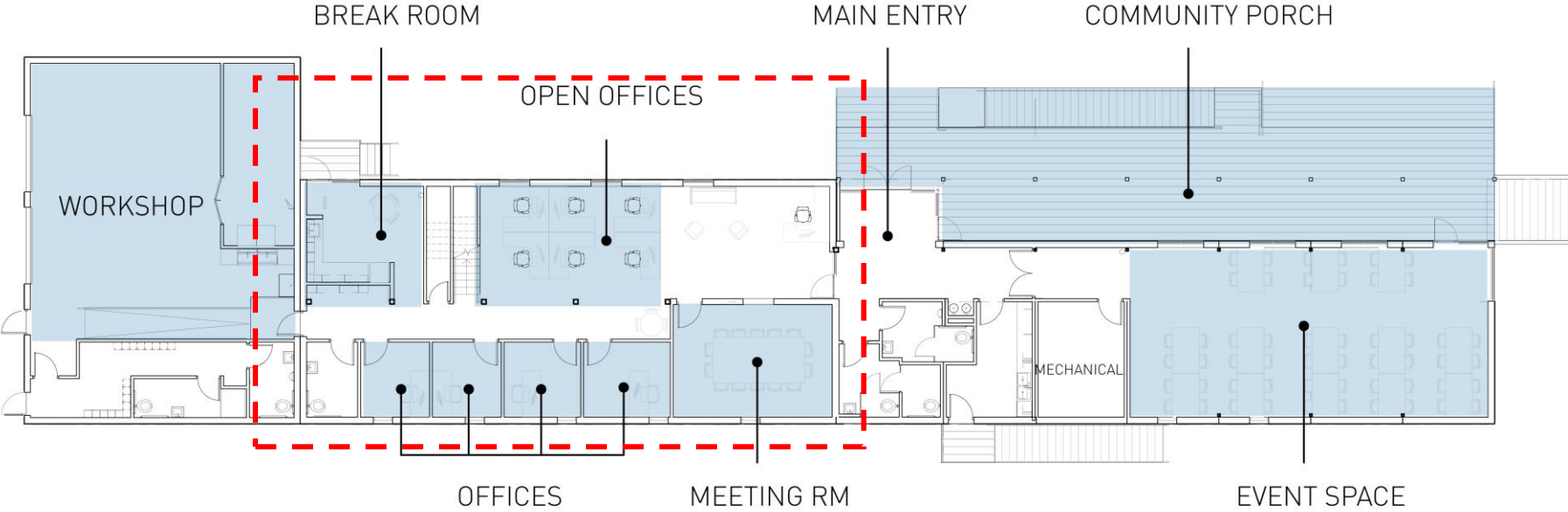
Layout



Multipurpose



Layout



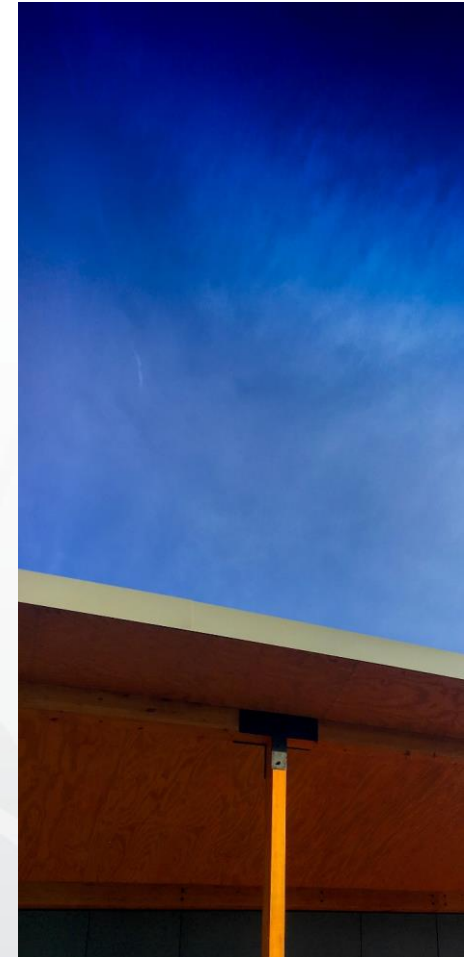
Layout



Layout



Site Built



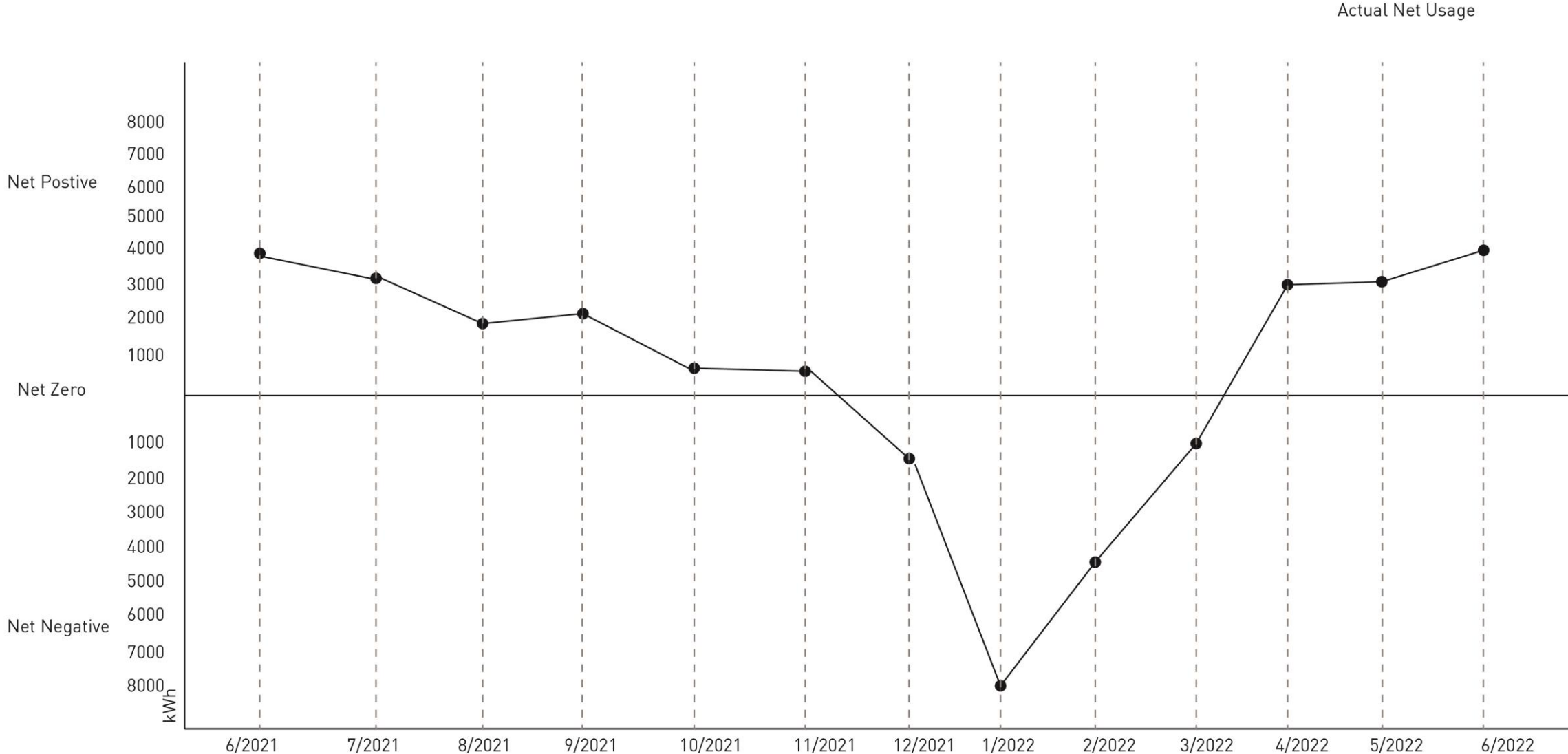
Calculating Energy



What the Numbers Show



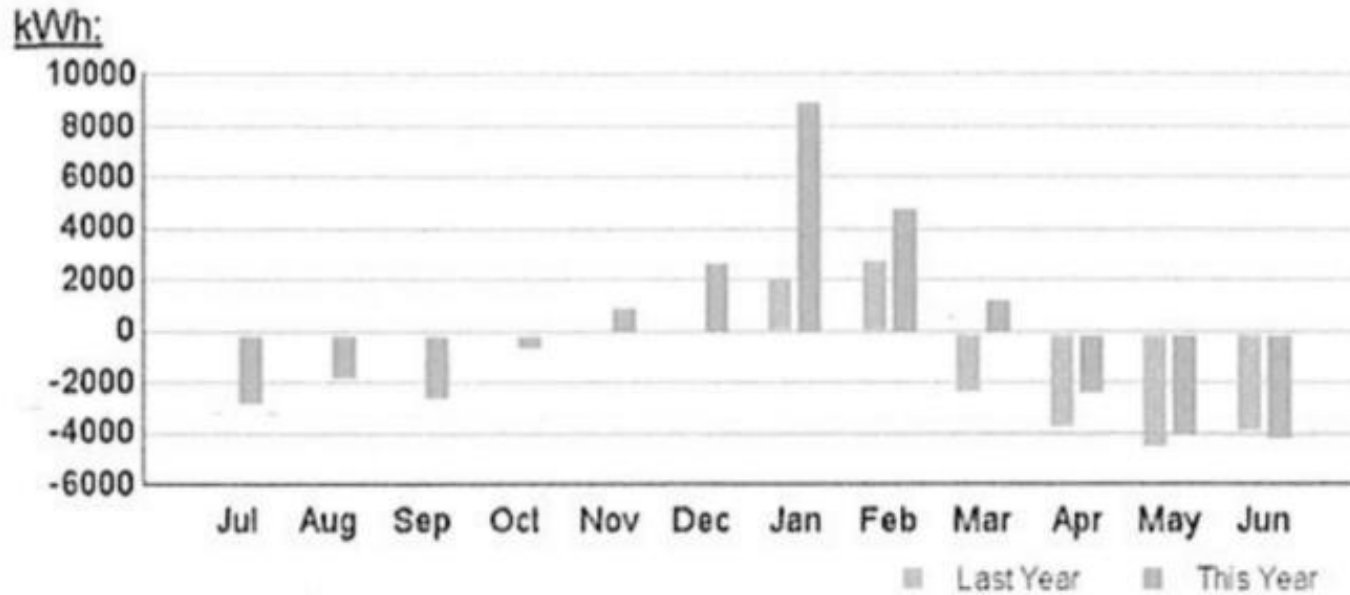
What the Numbers Show



What the Numbers Show

Usage and Demand

Period	Total kWh Usage	Avg Daily kWh Usage	# of Days	Avg Daily Temp (F)
Current Month	-4253	0	30	61
Last Month	-4018	0	32	66
Same Month Last Year	-3947	0	30	74



What the Numbers Show: 3 Year Report

Net Metering Summary Statement

Excess kWh Credits from Prior Billing	-4,017.5200
Total kWh Used/Generated from Current Billing	<u>-4,252.7200</u>
Bank NET Generation Balance	<u><u>-8,270.2400</u></u>

- You receive credit for each kWh you delivered to Duquesne Light Company (DLC) up to the total amount of electricity DLC delivered to you during the billing period. The credit is at full retail rate. Any excess kWh is carried forward to your next bill.
- On May 31 each year, we will credit your account for any kilowatt-hours we received from you in excess of the kilowatt-hours we delivered to you during the preceding year. The credit will be calculated at the Price to Compare (PTC) for your account.
- If you select an alternative electric generation supplier, it's your responsibility to alert them of your participation in Duquesne Light's Rdr 21 Net Meter Service. They may require additional information to allow them to properly service your account.



Questions?



Thank You!

