

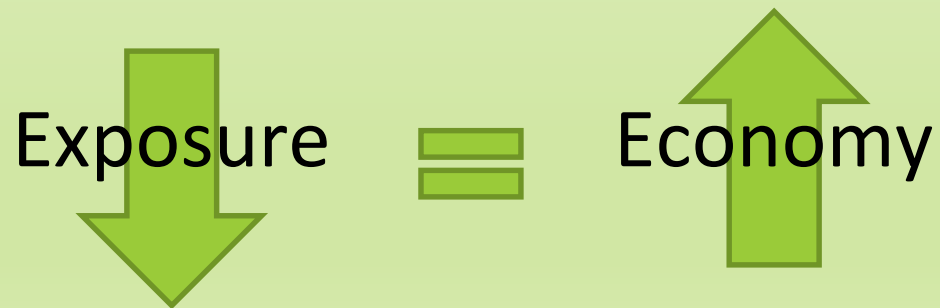
An aerial photograph of Perth Amboy, New Jersey, showing a mix of residential, commercial, and industrial areas along the waterfront. The image is split into two main sections. The left section is a dark, semi-transparent overlay containing white text. The right section is a clear aerial view of the city. In the foreground, several sailboats are visible in the water. The middle ground shows a dense residential area with many houses and some larger buildings. In the background, there are industrial buildings and a large body of water. The overall scene depicts a coastal city with a diverse economy.

# Perth Amboy: Green Jobs & Economic Development

Sarah Murphy, Sam Salvesen, & John Sousa

# Resilient Economic Development:

*The process of decreasing economic vulnerability while increasing the adaptive capabilities of the local economy.*



# Green Jobs:

Jobs that contribute to preserving or restoring Environmental Quality

## Sectors:

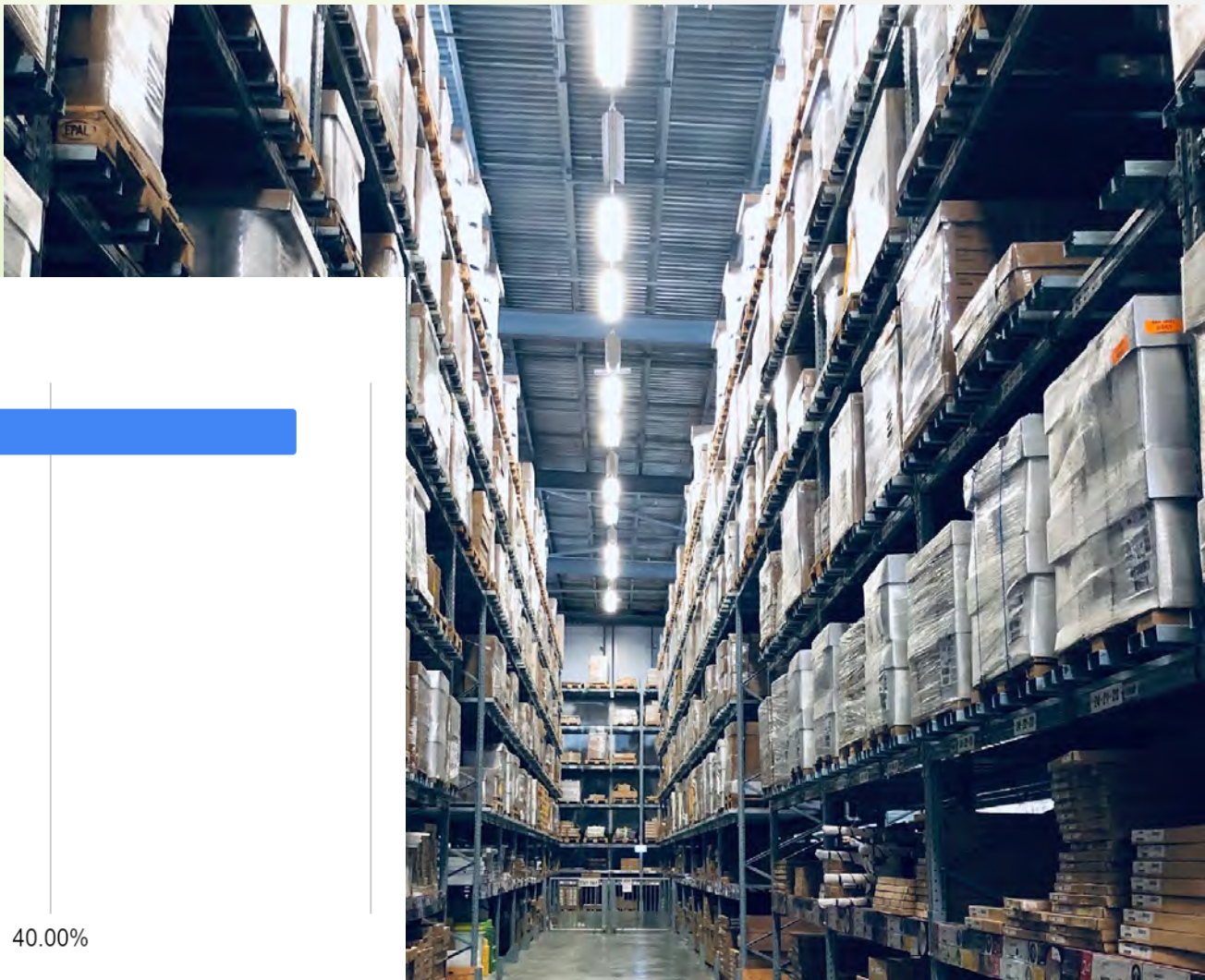
- ❖ Renewable Energy
- ❖ Buildings and Construction
- ❖ Transportation
- ❖ Manufacturing
- ❖ Food and Agriculture

## Benefits:

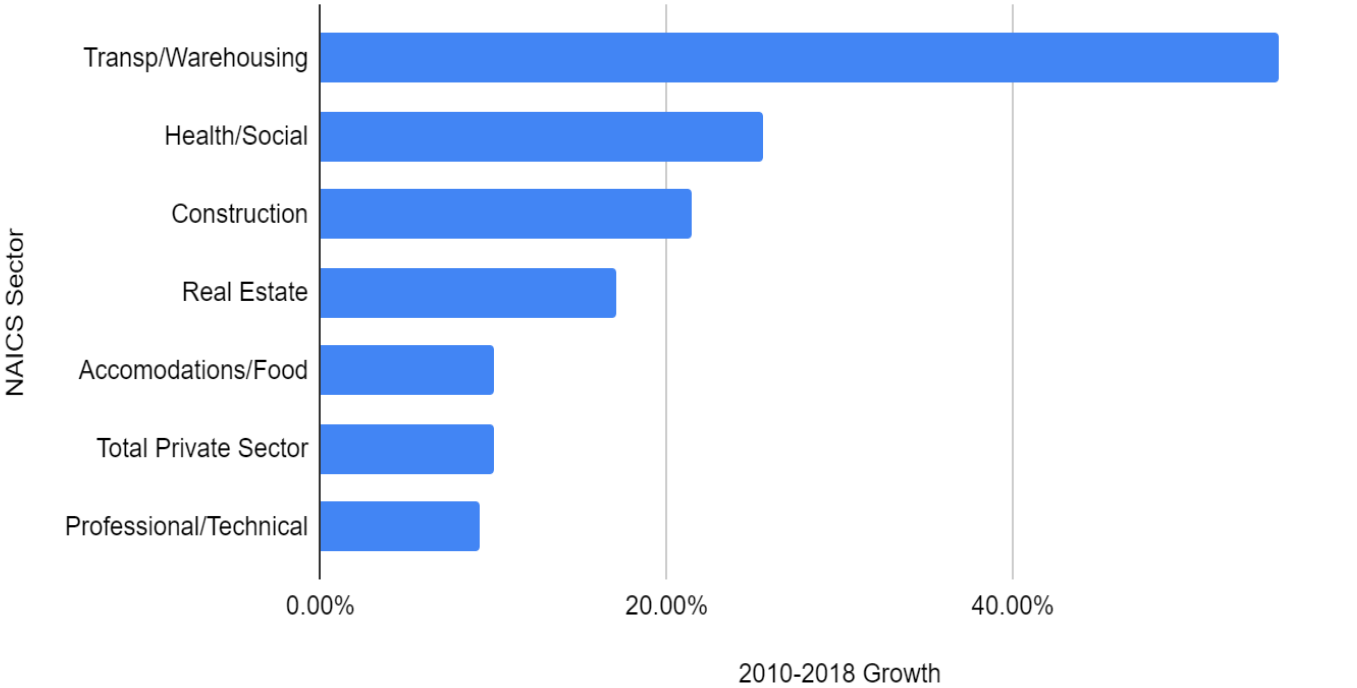
- ✓ Double dividend: environmental gains & employment generation
- ✓ Cost Savings
- ✓ Security- energy, food, resources



# Perth Amboy's Economic State



Growing Industries



# Perth Amboy's Economic State

- ❖ Wages failing to keep up with inflation
- ❖ Lack of high paying jobs

Highest Paying Industries			
NAICS Sector	Description	No. Employed	Avg. Weekly Wage
23	Construction	488	\$1,419
31	Manufacturing	216	\$1,305
44	Retail Trade	1,118	\$1,037
48	Transp/Warehousing	167	\$998
51	Information	3,820	\$840

General Demographics			
Characteristic	Perth Amboy	Middlesex Co.	New Jersey
Population	51,765	828,120	8,863,801
White	9%	42%	55%
Black/African-American	6%	9%	13%
Hispanic/Latinx	82%	22%	21%
Asian	1%	24%	10%
Foreign-born population	42%	33%	22%
Median household income	\$50,883	\$83,133	\$76,475
Median age	32.8	38.1	39.6
Poverty rate	21%	8%	10%
Unemployment rate	6.40%	3.60%	4.10%



# Current Challenges



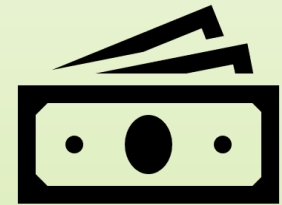
Limitations to  
transportation



Lack of employment  
diversity



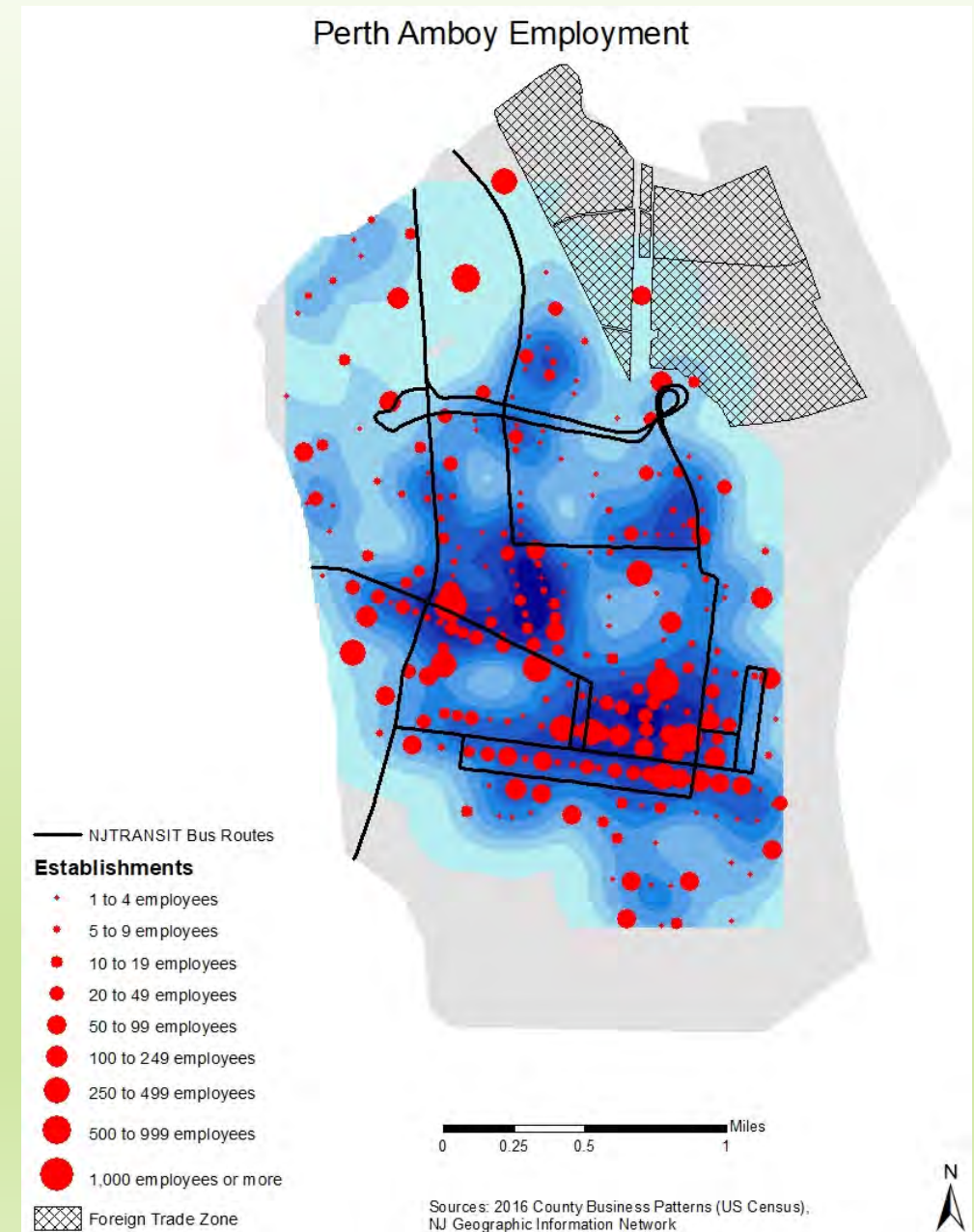
Contaminated Sites



Low Economic Mobility

# Perth Amboy Assets

- Marina and waterfront
- Tax incentive overlay zones
- Anchor institutions: Hospitals, Middlesex County College
- Transportation infrastructure and location



# Climate Stressors

- Damage to local businesses/homes due to storm intensity: Hurricanes, nor'easters, flooding from rainfall
- Vulnerable to disruptions in essential infrastructure: electricity, water treatment, public health
- Food production and access
- Cuts to worker productivity, decrease in disposable income, overall loss in GDP





# Climate Resilience & Poverty

City	Persons in Poverty	Persons in Workforce
Newark	28%	62%
<i>Perth Amboy</i>	<i>21%</i>	<i>63%</i>
Jersey City	19%	68%

## Poverty rates vs. climate risk & readiness

Among major U.S. cities with the highest climate risk & climate readiness.



Source: Notre Dame Global Adaptation Initiative/Clever Real Estate (David H. Montgomery/CityLab)

# Vision Statement

We seek to surface Perth Amboy's economic assets to attract green jobs and prepare existing industries for the negative effects of climate change, ensuring economic opportunity for legacy residents.



# Resilient Economic Development

Energy



Healthcare



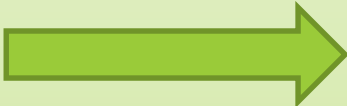
Food Security



Workforce Training



Transportation



# NJ State Energy Goals

**100 % clean energy economy by 2050**

*Strategy 2: Accelerating Deployment of Renewable Energy and Distributed Energy Resources with a Focus on Historically Underserved Populations*

*Strategy 6: Support Community Energy Planning and Action in Low- and Moderate-Income and Environmental Justice Communities”*

“To reduce effects of climate change and securing our state’s clean energy future for the benefit of all New Jerseyans and for generations to come.”

- Gov. Murphy

 pv magazine USA

## Powerful 100% renewable energy plan drafted in New Jersey

The New Jersey Board of Public Utilities has released its Draft 2019 Energy Master Plan, a rare mix of ambitious policy with an immediate ...



 www.greentechmedia.com > articles > read > new-jersey-governor-mo... ▼

## New Jersey More Than Doubles Offshore Wind Target to 7.5GW

Nov 19, 2019 - **New Jersey** Governor Phil Murphy on Tuesday signed an executive order backing a goal of 7.5 gigawatts of **offshore wind** by 2035, more than ...

 Solar Power World

## New Jersey approves new solar incentive program to replace ...

The New Jersey Board of Public Utilities (NJBPU) last week approved a new solar incentive program to aid in the transition from the current ...



# Energy:

Perth Amboy should position itself favorably for massive **energy** transition led by state energy goals

## Economic Benefits

### 1. Local Job creation:

Auditors, project managers, construction trades, handling energy efficient equipment, etc.

### 2. Improvements to infrastructure:

Help minimize risk from catastrophic events that may challenge Perth Amboy's quality of life, security and operations and economic activity

### 3. Savings for consumers and businesses:

High electricity rates in NJ, cost savings incurred from efficiency improvements



# Strategies

## 1. Promote Energy Efficiency

Prepare for increased demand from development, electrification

Maintain quality of life, reduce consumption

## 2. Invest in Grid Resiliency

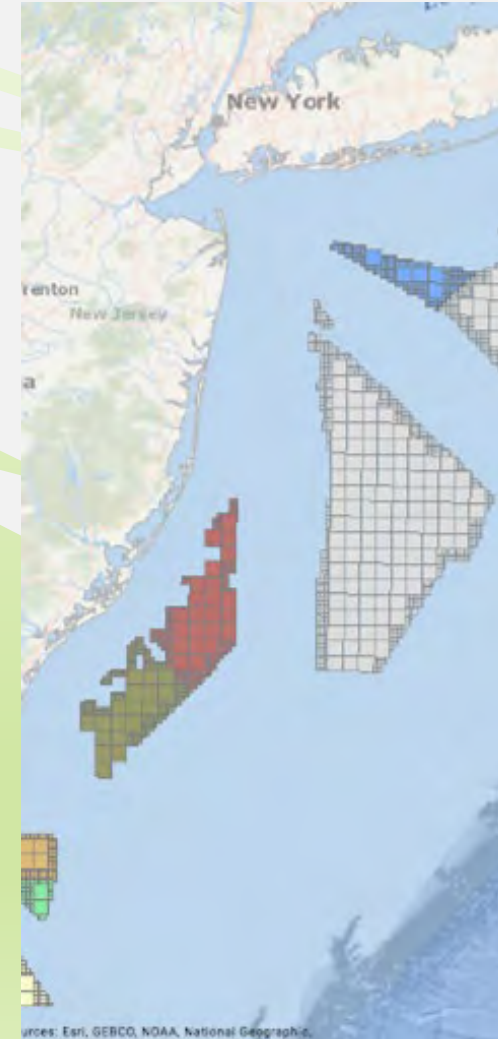
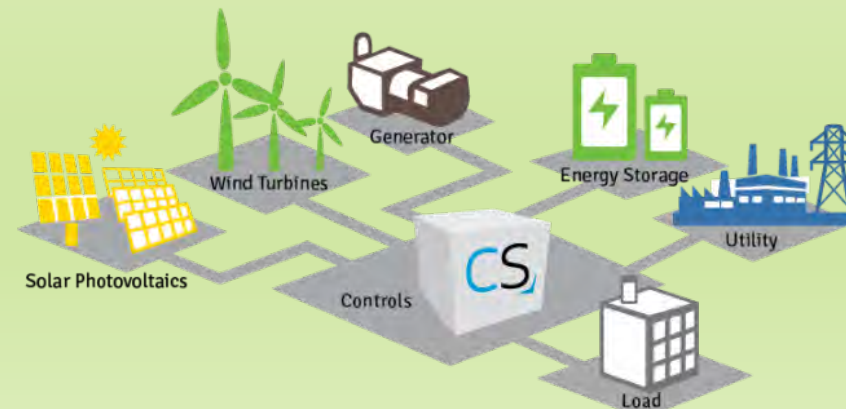
Severe weather events will disrupt energy production and distribution

Need to reduce risks and allow for renewable energy integration

## 3. Attract Renewable Energy Industries

Offshore Wind 7500MW by 2035

- Facilities and workforce needed



# Healthy Food Access



## “Asset Limited Income Constrained” Households

- 59% of households fall into “ALICE” category.<sup>4</sup>
- Result: *Food Insecurity*



## Urban Agriculture & Local Food Hub

- Stimulate urban & indoor agriculture
- Establish a city-wide Food Policy Council & food hub.
- Increase local food sales



## Environmental & Economic Benefits

- Shorter food supply chains
- Less energy & water intensive
- Entrepreneurship opportunities



# Healthy Food Access: Food Hubs





# A Resilient Food Revolution



**Advanced Technology:**  
Nutrient & water-controlled system

\$ 40 Billion market & growing



**Efficient and Sustainable:**  
95% less water  
LED lighting



**Crop Variety:**  
Leafy greens, tomatoes, specialty herbs

82% yield increase per square foot



**Resilient:**  
More adaptive local and regional food supply chain

# Indoor Agriculture Businesses on the Rise

Startup companies dominate this emerging sector



**New York, NY**  
*Farm: Kearny Pt, NJ*

- 100 Employees
- \$167.5 Private Funding
- \$5M Annual Revenue



**Irvington, NY**  
*Farms: IL, VA, PA, OH*

- 120 Employees
- \$112.9M Private Funding
- \$11.5M Annual Revenue



**Newark, NJ**  
**\*Camden, NJ**

- 110 Employees
- \$195M Private Funding
- \$50M Annual Revenue



## Climate Vulnerability

Newark is among the top five cities likely to experience extreme heat and sea-level rise impacts by 2040.<sup>1</sup>

# NEWARK, NJ : A Case Study

### *Sustainability Action Plan<sup>2</sup>:*

- “Outlines specific strategies to address Newark’s unique environmental issues to create more prosperous future city.”

### *South Ironbound Resiliency Action Plan<sup>3</sup>:*

- Lays out resiliency goals that will inform long term climate mitigation strategies and funding priorities.

# Adaptive Reuse

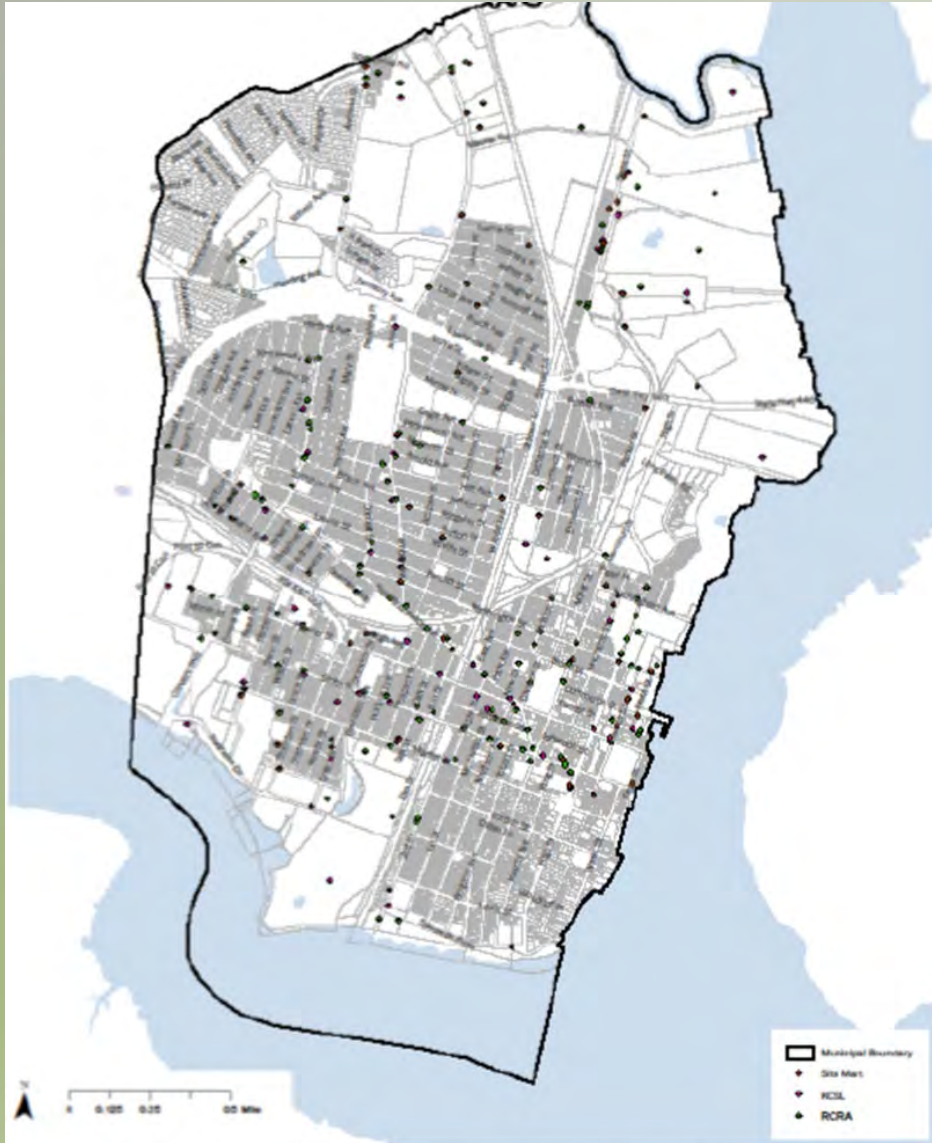
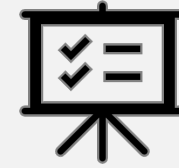


Figure 2. Sites listed in NJDEP Known Contaminated Site List (KCSL), NJ Office of Planning Advocacy Brownfields Site Mart, and USEPA RCRA databases.



## Brownfield Sites

- Categorized as “strategic development areas”
- 2016 Rutgers Study identified 124 contaminated sites – 32: vacant, closed, or inactive.<sup>5</sup>



## Strategies

- 1) Inventory and prioritize sites
- 2) Plan for reuse according to redevelopment priorities
- 3) Expanded NJ Brownfield Loan Program



## Multiple Benefits

- Improve health and safety
- Boost community aesthetics & property value by 30%
- Expand economic vitality





# AeroFarms®



## Newark's Ironbound

- Funding from Prudential Financial and Goldman Sachs
- NJ Economic Development Authority:  
\$9 million incentives - \$6.5 million tax credits
- 2 million pounds of leafy greens annually
- “Dream Greens” – Shoprite and Whole Foods
- Philips Academy Partnership
- “25 Farms over next 5 years”



# Workforce Development Strategies

Identify industry clusters:

- Health care
- Construction



# Inclusive Workforce Development

1. Adult Basic Skills training
2. Early education workforce training
3. Vocational linkage training
4. Employer-based training
5. Wrap-around services



# Healthcare Entry-level Occupations

- U.S. Population aging at a rapid rate
- Health care / tech innovation to bring millions more patients into the system
- Shortage in trained health care professionals

Occupation	Average Wage	Typical Education	Work Experience	Job Training	Metro LQ	Projected Growth (NJ)
Respiratory Therapists	\$78,870	Associate's degree	None	None	0.69	22.70%
Dental Hygienists	\$86,790	Associate's degree	None	None	0.8	12.60%
Radiologic Technologists	\$72,650	Associate's degree	None	None	0.93	9.80%
Emergency Medical Technicians, Paramedics	\$44,660	Postsecondary non-degree award	None	None	1.01	8.70%
Pharmacy Technicians	\$35,230	High school diploma or equivalent	None	Moderate-term on-the-job	0.74	8.70%
Surgical Technologists	\$58,070	Postsecondary non-degree award	None	None	0.78	9.80%
Licensed Practical and Vocational Nurses	\$55,640	Postsecondary non-degree award	None	None	0.8	12.50%
Dental Assistants	\$40,990	Postsecondary non-degree award	None	None	0.96	12.60%
Medical Assistants	\$37,720	Postsecondary non-degree award	None	None	0.75	23.00%
Medical Equipment Preparers	\$43,540	High school diploma or equivalent	None	Moderate-term on-the-job	1.28	11.70%





## EMS Corps

6-month stipend program for young men ages 18-26 offering training as Emergency Medical Technicians (EMTs) and preparation for careers in healthcare and public service.

# Alameda County, CA Case Study

- Daily EMT classes
- Tutoring
- Life coaching
- Physical fitness
- Career development workshops
- Mentorship support

# Construction Re-Training

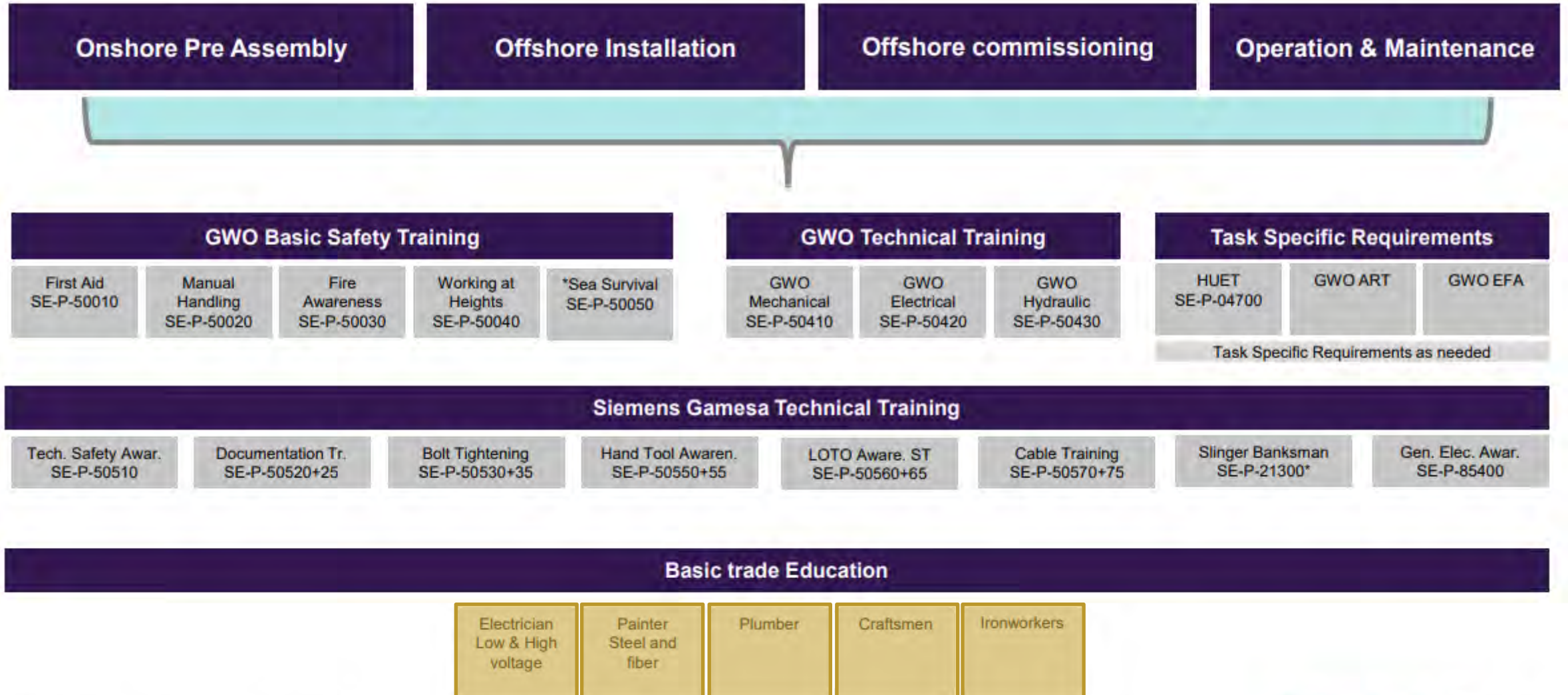


# Offshore Wind Industry- Identified Gaps

- Global Wind Organization (GWO) Safety and Technical Training
- Certificate or training programs for electrical schematics
- Degree, technical certification, and apprenticeship programs
- Welding certificate, training, and apprenticeship programs
- Heavy equipment training and apprenticeship programs
- Internship programs for students in wind energy



# Basic Training Requirements



Occupation	Average Wage	Typical Education	Work Experience	Job Training	Perth Amboy Employers	Projected Growth (NJ)
Electrical and Electronics Engineering Technicians	\$88,580	Associate's degree	None	None	3	6.30%
Electro-Mechanical Technicians	\$64,360	Associate's degree	None	None	3	9.90%
Welders, Cutters, Solderers, and Brazers	\$51,160	High school diploma or equivalent	None	Moderate-term on-the-job training	2	10.10%
Crane and Tower Operators	N/A	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training	0	9.10%
Excavating and Loading Machine and Dragline Operators	\$79,130	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training	1	8.70%
Motorboat Operators	\$60,150	Postsecondary non-degree award	Less than 5 years	None	0	15.30%
Structural Iron and Steel Workers	\$89,000	High school diploma or equivalent	None	Apprenticeship	1	15.10%
Pile-Driver Operators	N/A	High school diploma or equivalent	None	Moderate-term on-the-job training	0	5.00%
Painters, Construction and Maintenance	\$52,690	No formal educational credential	None	Moderate-term on-the-job training	12	7.20%
Plumbers, Pipefitters, and Steamfitters	\$76,030	High school diploma or equivalent	None	Apprenticeship	6	19.30%

# Ferry Service

- Tottenville, Wall Street, Midtown, Jersey City
- FTA Passenger Ferry Grant Program - Section 5307
- Capital projects to establish new ferry service, repair and modernize ferry boats, terminals, and related facilities and equipment
  - Carteret NYC (\$6 MM grant)
  - South Amboy NYC (\$5 MM grant)



# Green Economic Development Strategies & Timeline



Establish a *Green Economic Task Force*

Conduct an Assessment:

- ✓ Priority Areas
- ✓ Assets
- ✓ Workforce Capacity

Initiate Community, Academic & private sector partnerships

Report findings & establish policies

Connect workforce to Jobs

# Funding

- **New Jersey Board of Public Utilities Clean Energy Program:**  
Offers grants for up to 20% of the cost of large-scale renewable energy facility development  
ESIP funding mechanism for installing higher efficiency systems in public buildings
- **Port Authority Portfields Initiative PANYNJ program:**  
helps communities transform brownfield sites into warehouse and distribution centers.
- **Offshore wind technical assistance program:**  
launched by the New Jersey Economic development authority to support local companies and develop the skills needed to participate in the offshore wind industry
- **USDA Funding For Food Hubs and Urban Agriculture**
- **NJ Department of Labor and Workforce Development**  
Growing Apprenticeship in Non-Traditional Sectors



# Conclusion



**Strong & Resilient Economy**

# Citations

- <sup>1</sup> Mock, Brentin, and CityLab. *What U.S. Cities Facing Climate Disaster Risks Are Least Prepared?* 17 Sept. 2019, <https://www.citylab.com/environment/2019/08/climate-impacts-resilient-cities-environmental-justice/596251/>. Accessed 22 Oct. 2019.
- <sup>2</sup> “The City of Newark Sustainability Action Plan.” *The City of Newark Sustainability Action Plan*, City of Newark, 2013. Retrieved from <https://rucore.libraries.rutgers.edu/rutgers-lib/42923/PDF/1/play/>
- <sup>3</sup> *South Ironbound Resiliency Action Plan (Newark, New Jersey)*. 26 Aug. 2015, <https://www.adaptationclearinghouse.org/resources/south-ironbound-resiliency-action-plan-newark-new-jersey.html>. Accessed 22 Oct. 2019
- <sup>4</sup> *Investing in Our Communities A Resource Guidebook for NEW BRUNSWICK & PERTH AMBOY, NJ*. Federal Reserve Bank of New York, 7 Mar. 2017, <https://www.newyorkfed.org/medialibrary/media/outreach-and-education/cra/middlesex-county-resource-guidebook.pdf>
- <sup>5</sup> Ravit, Beth. “Perth Amboy Brownfield Inventory Project.” *Perth Amboy Brownfield Inventory Project CUES at Rutgers SEBS*, 2016, <https://cues.rutgers.edu/perth-amboy-brownfield-inventory/>
- <sup>6</sup> KSS,Architects.23 Oct, 2019. Bringing farms back to the people - KSS Architects - Medium. Retrieved from <https://medium.com/@KSSarchitects/bringing-farms-back-to-the-people-2ffd4dde2d12>