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City of Milwaukee
Milwaukee.gov/eco

# Green Jobs in Milwaukee

CCFN #200886

ENVIRONMENTAL COLLABORATION OFFICE

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# ECO's Mission

- Make Milwaukee a world class eco-city on America's Fresh Coast.
- Develop practical solutions that improve people's lives and the economy.
- Protect and restore the natural eco-systems that are integral to our long-term prosperity.
- Develop community and global partnerships
- Implement award-winning programs and the City's Refresh Milwaukee sustainability plan.

# Core Sustainability Programs


Me$^2$ is currently offering rebates up to $1,000 for qualified home energy improvements like insulation, furnaces, boilers and windows

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# Role of ECO in Green Jobs

- ReFresh Milwaukee Sustainability Plan
  - Every Chapter asks how sustainability strategies support job creation
- With limited financial resources, we work on policy and market-based solutions to increase our impact.
- ECO is not a workforce development agency. However, we leverage our influence to support green job development.
- ECO's participation in the US Department of Energy's Better Buildings Workforce Accelerator is currently our primary formal green jobs initiative

# Varieties of Green Jobs

- Electricians and laborers supporting energy efficiency and renewable energy
- HVAC and Building Controls
- Water jobs, especially plumbing and water/waste water systems
- Housing construction/deconstruction
- Landscaping/arborist
- Manufacturing of sustainable technologies
- Professional jobs-  Coordinators, consultants, engineers, building operators, etc.
- Entrepreneurial opportunities

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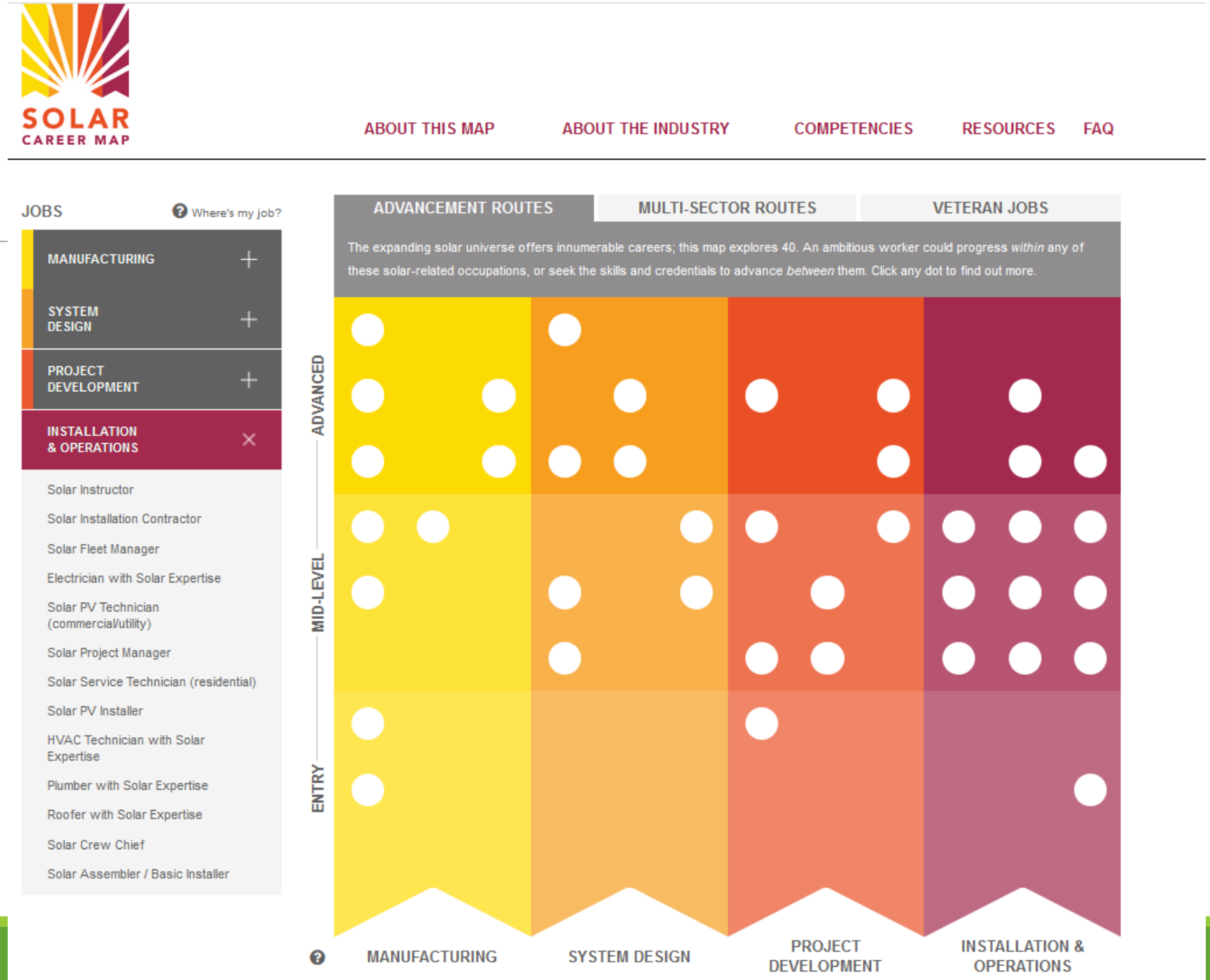
# Solar Career Map

https://www.energy.gov/eere/education/map-career-clean-energy




https://irecsolarcareermap.org/

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# HVAC Careers

CAREERS IN CLIMATE CONTROL TECHNOLOGY (HVAC/R)

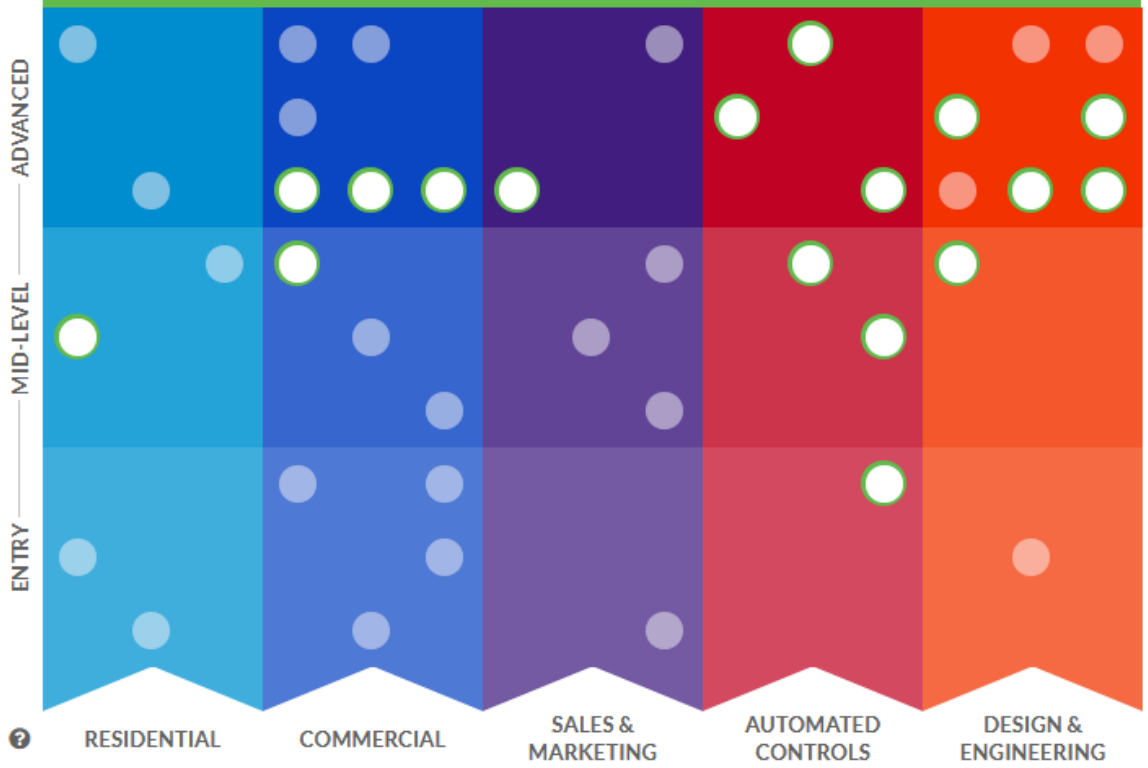
ABOUT THIS MAP | ABOUT THE INDUSTRY | TRAINING | RESOURCES | FAQ

JOBS — Where's my job?

- RESIDENTIAL +
- COMMERCIAL +
- SALES & MARKETING +
- AUTOMATED CONTROLS +
- DESIGN & ENGINEERING +
- GREEN JOBS ×
  - Residential Service Technician
  - Commercial Service Technician
  - Stationary Engineer
  - Journey-Level HVAC Technician
  - Journey-Level Refrigeration Technician
  - Equipment Manufacturer Representative
  - Controls Installer
  - Building Automation Systems Trainee
  - Building Automation Systems Technician
  - Senior Operations Systems Analyst
  - Building Automation Systems Engineer
  - Building Automation Systems Manager
  - Test & Balance Technician
  - Commissioning Specialist
  - Energy Analyst
  - HVAC Instructor
  - Energy Engineer

ADVANCEMENT ROUTES | SAMPLE MULTI-SECTOR ROUTES | GREEN JOBS

There is no universal agreement on what constitutes a green job; it is an ever-evolving concept. According to the U.S. Department of Labor's Occupational Information Network (O*NET), a green career can be any occupation that is affected by activities such as conserving energy, developing alternative energy, reducing pollution, or recycling. Many occupations in the world of HVAC/R touch on these activities, some HVAC/R occupations are more obvious than others. The HVAC/R experts involved with the development of the Careers in Climate Control Technology Map chose occupations that could be easily recognized as applying "green" practices on a regular basis.




https://hvaccareermap.org/

# Green Jobs in Milwaukee

MILWAUKEE AREA Technical College

**AUTOMATED BUILDING SYSTEMS**

Home | Academic Programs | Manufacturing, Construction & Transportation | **Automated Building Systems**

**PROGRAM INFORMATION**

**Location:** Oak Creek Campus

**Pathway:** Manufacturing, Construction & Transportation

**Program Code:** 30-481-1

**Offering:** In-class

**Degree Type:** Technical Diploma

**Start Dates:** August and January

- MATC is a pathway to many trades and green jobs
- The Wisconsin University system has expanded offerings in water and energy technology
- The Midwest Renewable Energy Association provides training in solar energy
- Trade unions like IBEW provide training and pathways
- MMSD's Fresh Coast, Fresh Start program for Green Infrastructure

https://www.matc.edu/course-catalog/manufacturing-construction-transportation/automated-building-systems.html

# US DOE Better Buildings Workforce Accelerator

Three Year Effort to support energy efficiency workforce in buildings.

DOE provides technical assistance and connections with a national community of practitioners

Accelerator National Goals:

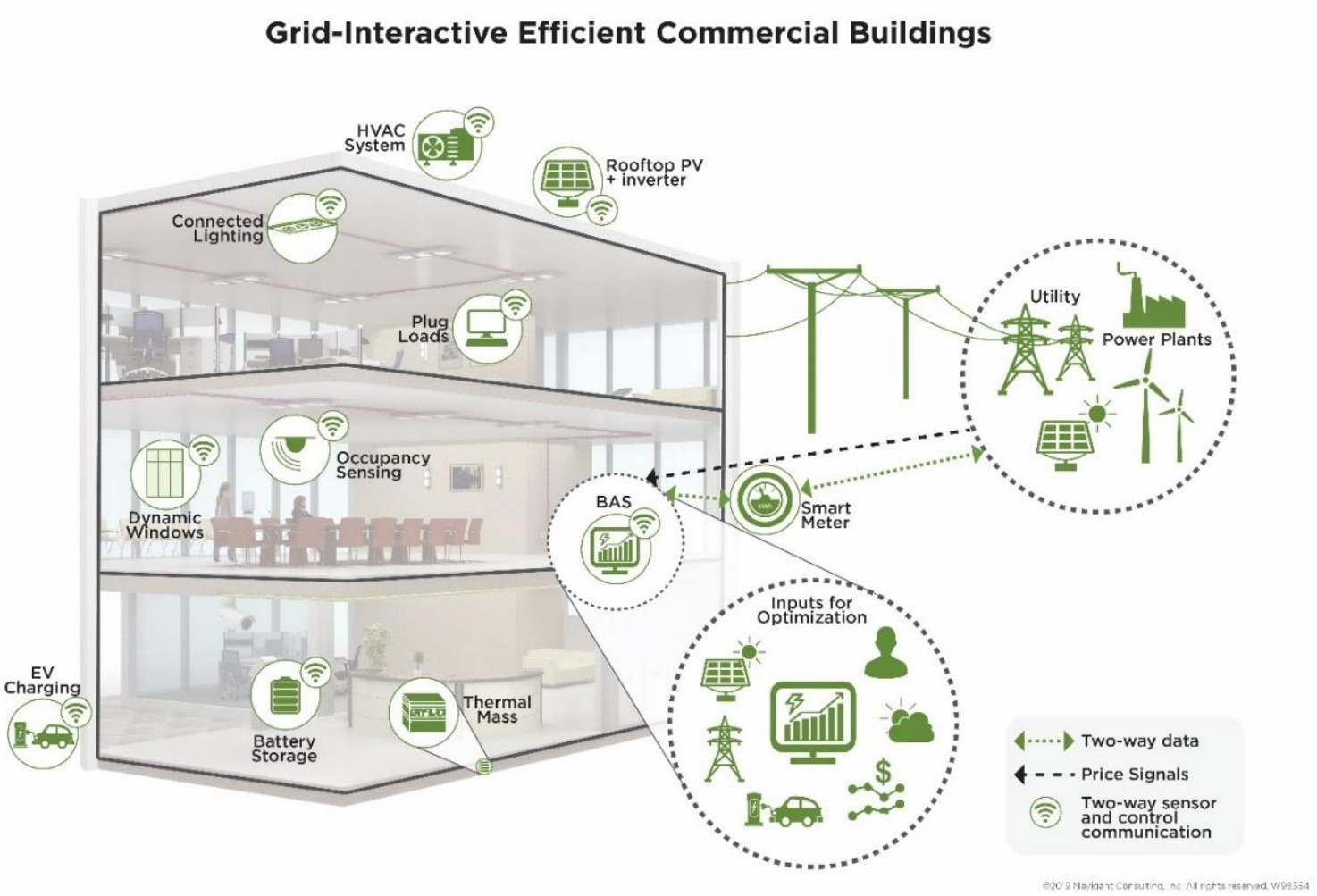
***Build Interest***: Increase the awareness and diversity of the energy efficiency field. Showcase building energy efficiency careers as welcoming, impactful, and rewarding. Build awareness of these careers.

***Streamline Pathways***: Clarify the pathways for building energy efficiency careers. Incorporate efficiency education into established programs.

***Improve Skills***: Update continuing education modules. Improve building science curricula. Increase training on digital tools to manage performance and fault detection.

# The Future of Buildings

- More *efficient*
  - Higher performance, better indoor air quality and moisture management, reduced carbon emissions
- More *technologically advanced*
  - Integrated comfort & fresh air systems, solar and vehicle charging, more sensors & controls, cybersecurity systems
- More *intelligent*
  - Responsive to occupant needs to balance energy use, costs, and comfort



# Who Is the Building Efficiency Workforce?

## Efficient Building Technology –

Development → Integration → Installation → Diffusion

Research & Manufacturing

Architecture & Engineering

Construction & Facility Management

Services & Programs

**2.3+ Million Workers in Across these Industries in Efficiency Alone**

# Existing Workforce Challenges: Low/Negative Perception

## Lacking Interest and Awareness of Careers Among Young People

***71% of students are "definitely" or "probably not" interested in HVAC careers***

*Source: Electric & Gas Industries Association (2018)*

## Women and Black Americans Are Underrepresented in Workforce

***Women make up 47% of the U.S. workforce but only 25% of the efficiency workforce. Black Americans make up 12% of the U.S. workforce but only 8% of the efficiency workforce.***

*Source: U.S. Energy and Employment Report (2020)*

## Lacking Identity Within Building Efficiency Workforce

***Most efficiency professionals identify as other workforces – construction, manufacturing, business services, etc.***

*Source: National Renewable Energy Laboratory (2020)*

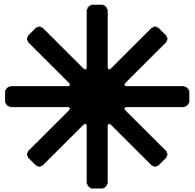
# Existing Workforce Challenges: Confusing Career Pathways

### Credentials are Fragmented and Nontransparent


***Almost 75%* of Solar Decathlon professors say *no high-performance/sustainable building courses are required* for students to graduate.**

*Source: National Renewable Energy Laboratory (2020)*

### Sustainability Trainings are Often Elective Rather Than Foundational



***Almost 75%* of Solar Decathlon professors say *no high-performance/sustainable building courses are required* for students to graduate.**

*Source: National Renewable Energy Laboratory (2020)*

### More Extreme Hiring Difficulties Among Efficiency Employers

***80-90%* of efficiency employers report hiring difficulty for construction-related efficiency jobs, *higher than hiring difficulties among non-efficiency employers.***

*Source: U.S. Energy and Employment Report (2020)*

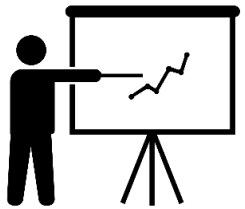
# Existing Workforce Challenges: Lacking Skills for Quality Installation

## Limited Adoption of Digital Tools to Streamline Processes

***Construction sector productivity lags the rest of the economy and could benefit from digitization.***

*Source: McKinsey & Company (2017)*

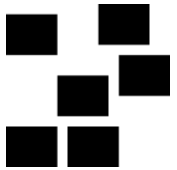
## Sustainability & Building Science Content is Often Ad Hoc, Not Standardized



***50%+ of Solar Decathlon professors say there are not sufficient teaching materials available to teach students high-performance building topics.***

*Source: National Renewable Energy Laboratory (2020)*

## Improper Installation Leads to Lacking Trust in Efficiency Technology



***Without proper installation and maintenance, buildings can often waste up to 30% of energy.***

*Source: Pacific Northwest National Laboratory (2015)*

# Challenges

- Limited funding
- Family-supporting green jobs such as electricians require years of training and on the job supervision.
- ECO is not a workforce development agency per se.
- Since we primarily support market-based solutions, we have to get private employers on board.
- From a timing standpoint, it's tricky to line up training programs (which can take years), limited term grant funding for projects, and employer recruitment.

# Strategies to Address Challenges

Goal. Ensure training pathways for a diverse and qualified building efficiency workforce that enable high performance buildings.

| | | |
|---|---|---|
| Negative Perception | **Build Interest** | » Showcase building energy efficiency careers as welcoming, impactful, and rewarding. |
| Confusing Pathways | **Streamline Paths** | » Clarify pathways for building efficiency careers. Add building science to established credentials. |
| Poor Quality Installation | **Improve Skills** | » Update continuing education. Increase use of digital tools to detect faults and manage performance. |

# Workforce Accelerator: Local Partners

- Employ Milwaukee
- MATC
- City Clerk's Workforce Development Coordinator
- Community Advocates Public Policy Institute
- Milwaukee Area Labor Council
- MMSD

# Workforce Accelerator: Local Goals- 3 Years

- **Develop and publicize clear pathways** for new workers to enter and have success in the energy efficiency workforce.
- **Focus our efforts with economic equity** in mind
- **Target of helping at least thirty people of color find secure work** in this sector with family supporting wages
- Supporting an improved and **diversified** energy efficiency workforce beyond the project period
- Support careers with family-supporting wages

# Workforce Accelerator: Next Steps

- Formalize energy efficiency workforce working group and Industry Advisory Group and finalize goals, including identifying specific EE workforce categories.
- Match national jobs maps with local training providers
- Work plans and streamlined pathways proposed with local workforce investment board, trade unions, technical college, or other workforce partners
- Develop website and other outreach strategies to build interest and promote training pathways

# Other ECO efforts on green jobs

- Better Buildings Challenge grant program- MATC Coordination
- Blue Skies landscaping and green infrastructure jobs
- Solar training initiatives at HACM, and supporting Walnut Way in solar training
- Green Schools Consortium of Milwaukee
- Escuela Verde school solar project
- ARRA Community Workforce Agreement
- Supporting City County Task Force on Climate and Economic Equity

Daniel Rodriguez

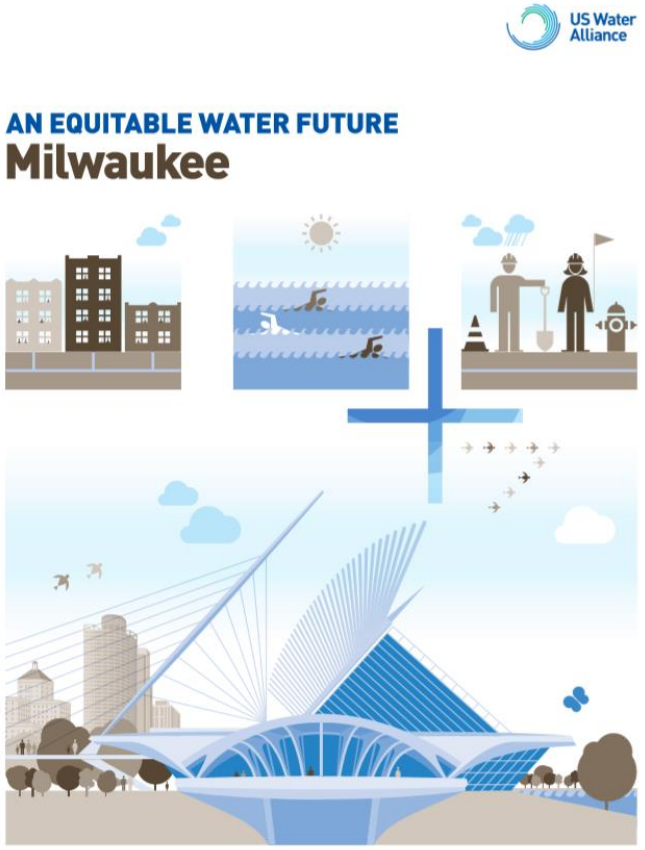
# City County Task Force on Climate and Economic Equity

- Preliminary Report Issued in March 2020
- Jobs and Equity Chapter highlights racial disparities and sectors of green jobs that could be grown over time with new investments
- The Task Force is currently developing a formal Climate and Equity Plan over 2021 and 2022.

**Milwaukee.gov/ClimatePlan**

# Fresh Coast Fresh Start

- Water Industry
  - Green Infrastructure
  - Construction
  - Watercourse
  - Forestry
- Re-entry, under or unemployed
- 3-year program, 15-20 participants each year
  - Recruitment and Training
  - Hands-on Training
  - Pathway to employment or apprenticeship
- Partnerships with Local WFD agencies, NGOs, and employers
  - Cream City Conservation Corps
  - Milwaukee County Parks



# Takeaways

- Efforts are underway in Milwaukee to build multiple pathways to green jobs
- Green jobs and energy efficiency jobs are often not identified as such. The more we can shift whole industries in a green direction, the more green jobs there will be.
- Higher skills and training lead to higher wage jobs
- Can our high schools play a larger role in preparing students for the trades and green jobs?
- The number of green jobs that will be possible are commensurate with the public and private investment in green energy and services
- Let's heighten the focus on environmental sustainability in our policies and public expenditures.
- We need to clarify pathways, increase interest in green jobs, and approach our efforts with racial equity in our minds and hearts.