



U.S. DEPARTMENT OF
ENERGY

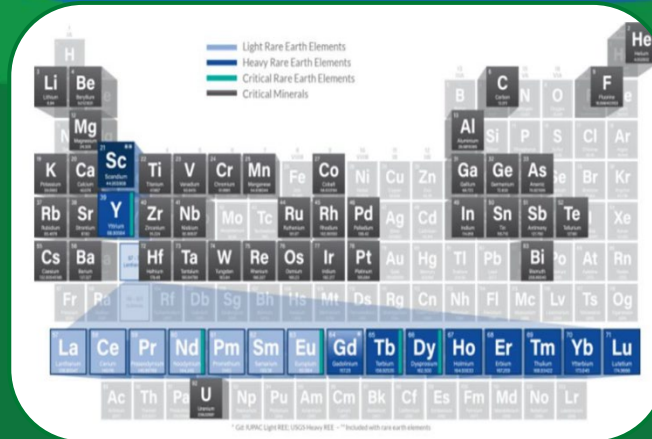
Fossil Energy and
Carbon Management

Addressing Energy Justice, Equity, and Societal Considerations and Impacts Through a Community Benefits Plan Framework: A Discussion

Emily Brooks and Natenna Dobson

Fossil Energy and Carbon Management, Office of Resource Sustainability

April 2024



Overview



Key concepts and policies for Equity and Environmental Justice (EEJ)



What makes a good Community Benefits Plan (CBP)?



Preview: CBP game with Colleen McLean, Fellow with the Office of Energy Justice and Equity



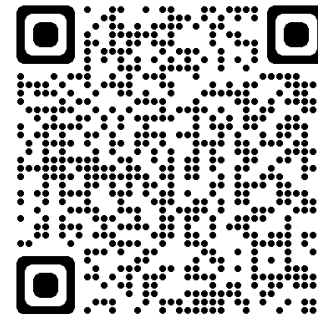
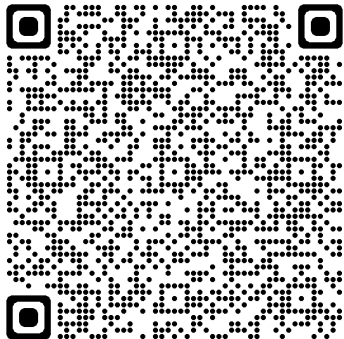
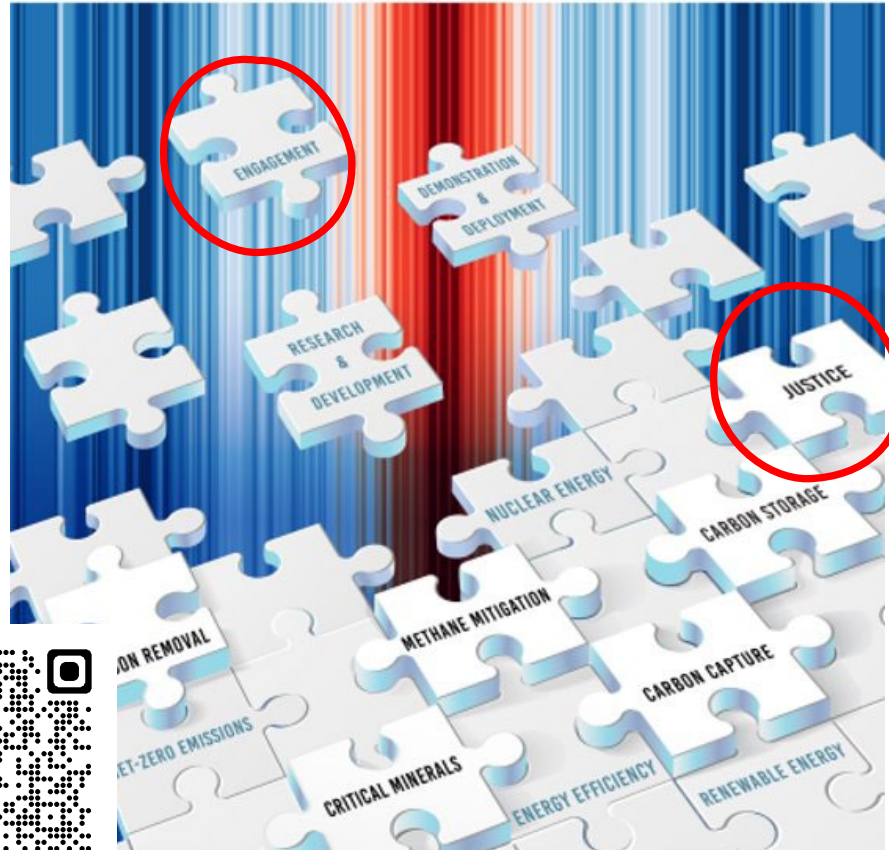
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Fossil Energy and
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Key Concepts and Policies for EEJ

STRATEGIC VISION

The Role of Fossil Energy and Carbon Management in Achieving Net-Zero Greenhouse Gas Emissions



Planning for Societal Considerations & Impacts in FECM Projects

Office of Fossil Energy and Carbon Management

Office of Fossil Energy and Carbon Management » Resources »
 Planning for Societal Considerations & Impacts in FECM Projects

The projects that build the clean energy economy will create new infrastructure that holds the potential to drive new regional economic development, technological innovation, and high-wage employment for communities across the United States as we work to make progress on the nation's climate goals. At the same time, it is critical to understand and address the societal considerations and impacts of these projects at local, regional, and global levels.

Apply to Become an SCI Reviewer!

Projects funded by the Office of Fossil Energy and Carbon Management will develop the following plans to address societal considerations and impacts, ensuring projects center on engagement and are sustainable and equitable:

- Community, Tribal, and Stakeholder Engagement
- Diversity, Equity, Inclusion, and Accessibility
- Justice40
- Quality Jobs

Learn more about each of these project plan areas below.

Policy and strategic priorities

Congress

- **Infrastructure Investment and Jobs Act (IIJA/BIL)**
- **Inflation Reduction Act (IRA)**

White House

- **12 or more Executive Orders on racial equity, climate change, underserved communities, Tribal communities, Justice40, workforce planning**
- **White House Interim Justice40 Guidance**

DOE

- **Community Benefits Plans (BIL/IRA reporting)**
- **Equity Action Plan**
- **DOE Justice40 Guidance**
- **DOE Order 144.1 Tribal Engagement**
- **Environmental and Energy Justice Policy (forthcoming)**
- **Environmental Justice Strategic Plan (forthcoming)**

FECM

- **Net Zero Strategic Plan**
- **SCI Guidance**
- **Domestic Engagement Strategic Plan**

Key concepts

Environmental Justice (Executive Order 14096)

Just treatment and **meaningful involvement** of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment so that people:

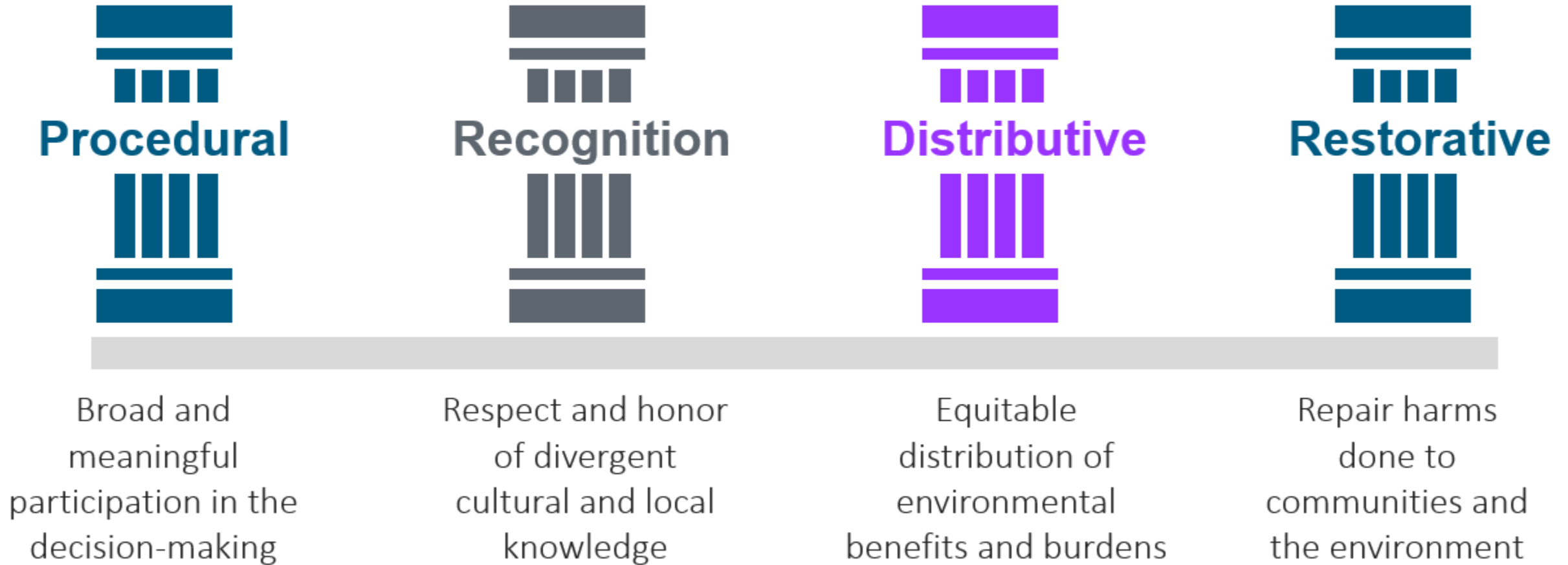
- are fully protected from **disproportionate and adverse human health and environmental effects** (including risks) and hazards, including those related to climate change, the **cumulative impacts** of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and
- have **equitable access** to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices.

Equity (Executive Order 14091)

Consistent and **systematic treatment** of **all individuals** in a fair, just, and impartial manner, including **individuals who belong to communities that often have been denied such treatment**, such as:

- Black, Latino, Indigenous and Native American, Asian American, Native Hawaiian, and Pacific Islander persons and other persons of color;
- members of religious minorities;
- women and girls;
- LGBTQI+ persons;
- persons with disabilities;
- persons who live in rural areas;
- persons who live in United States Territories;
- persons otherwise adversely affected by persistent poverty or inequality; and
- **individuals who belong to multiple such communities.**

Pillars of Energy Justice



Heffron and McCauley, The Concept of energy Justice Across the Disciplines, 105 Energy Policy 658, 659 (2017)

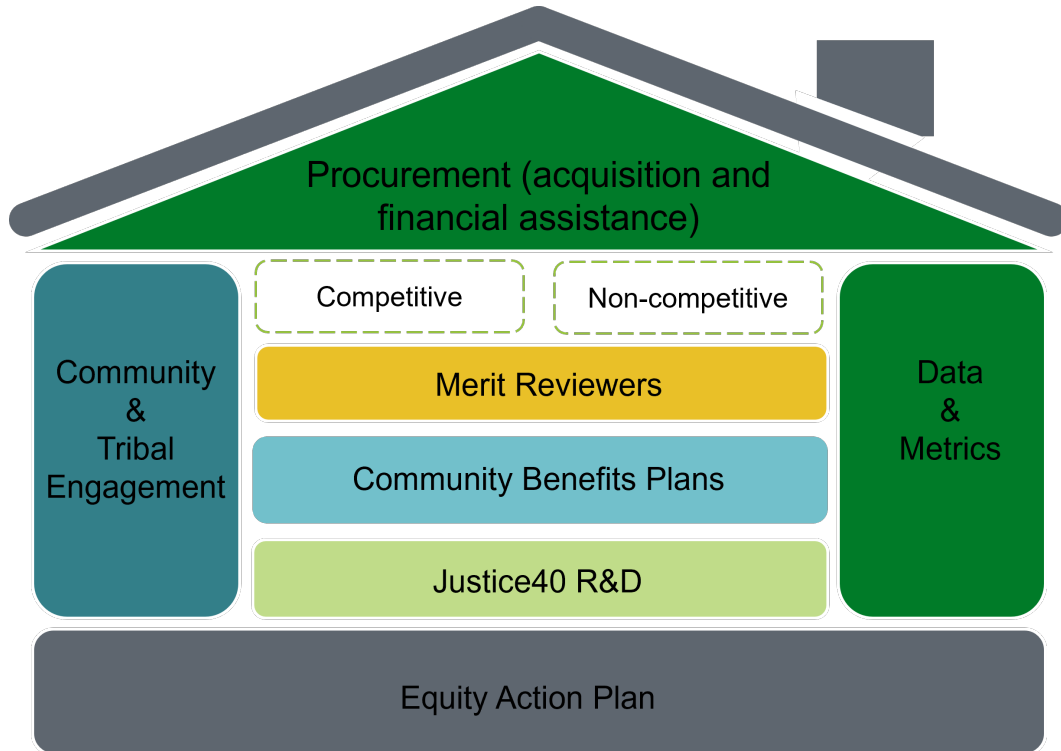


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What makes a good CBP?

What is a Community Benefits Plan?



New requirement for all BIL/IRA-funded FOAs. CBPs are reviewed by subject matter experts and count for 20% of an applicant's final score/

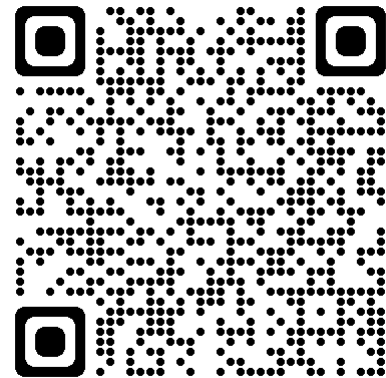
If the project is selected:

- DOE will incorporate the **CBP** into the award and the recipient will be **required** to **implement** the **CBP** as proposed.
- During the life of the award, DOE will **evaluate** the recipient's progress.



Four priorities

1. Community and Labor Engagement
2. Job Quality and Workforce Continuity
3. Diversity, Equity, Inclusion, and Accessibility
4. Justice 40 Implementation



SMART milestones and adequately resourced

Specific, Measurable,
Achievable, Relevant, and
Time-bound

Dedicated personnel and
budget to ensure successful
implementation



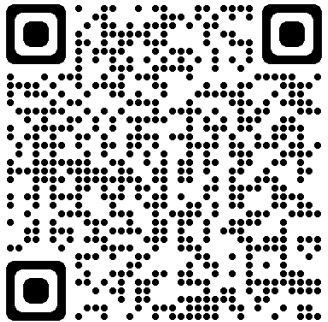
What if my project is early technology readiness level (TRL)?

Flexible CBP framework recognizes that DOE projects have different phases and TRLs, including:

- Bench-scale R&D
- R&D that may advance to commercialization, but is currently in the feasibility and analysis phase
- Demonstration & Deployment

Guidance for R&D projects that may advance to commercialization in future phases

- Research, analysis, and assessment (show your work)
- Early engagement with diverse stakeholder groups
- Two-way engagement



A screenshot of a website page from the Office of Fossil Energy and Carbon Management. The page title is "Planning for Societal Considerations & Impacts in FECM Projects". The page content includes a navigation menu at the top with links for "ABOUT US", "MISSION", "SCIENCE & INNOVATION", "RESOURCES", and "SERVICES". Below the title, there is a sub-header "Office of Fossil Energy and Carbon Management". The main text discusses the importance of societal considerations and impacts for clean energy projects. A call-to-action box on the right side of the page says "Apply to Become an SCI Reviewer!". A list of project plan areas is provided at the bottom, including "Community, Tribal, and Stakeholder Engagement", "Diversity, Equity, Inclusion, and Accessibility", "Justice40", and "Quality Jobs".

Two-Way Engagement

Move from...

Engagement as one-way
informing or educating

Engagement with goal of
securing acceptance

Defining engagement in terms
of project footprint

Engagement focused upon physical
infrastructure

Towards...

Two-way model of engagement as **dialogue
and relationship**

Engagement as **listening** to ideas, concerns, values
& priorities **in order to make adaptations**

Using dual definitions of “communities” in terms of both
geographically proximal areas and broader groups that could
be impacted

Engagement on both physical infrastructure *and data* related
to the project

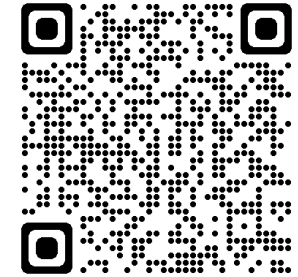
Community access to or co-production of data as an area for
engagement

Types of challenges noted during reviews

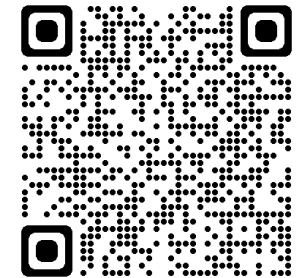
- Do not reflect an understanding of local context, history
- Only include an institutional DEIA plan not specific to project
- DEIA plan focuses on early career stage only, not leadership
- Narrow focus on certain stakeholder types
- Rely on one-way information sharing
- Inadequate resources dedicated to implementation
- Commitments to DEIA and benefits lack specificity and accountability

Community Benefits Plan Resources

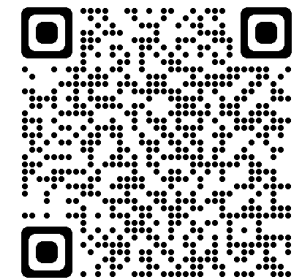
Planning for Societal Considerations and Impacts in
FECM Projects



About Community Benefits Plans + Template



Community Benefit Agreements





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Preview: Community Benefit Plan Game



Community Benefits Planning Activity

Community Benefits Plan for Fuel Cell Trucking at Food
Distribution Hub in Rivertown USA

This work is adapted from materials developed by the NISE Network and released under CC BY-NC-SA 4.0 DEED. This work is also licensed under CC BY-NC-SA 4.0 DEED.



LEARN ABOUT THE MODEL
COMMUNITY: RIVERTOWN, USA

5 MINS



HEAR THE PROPOSAL TO ADD
HYDROGEN FUEL CELL TRUCKING IN
RIVERTOWN

5 MINS




HELP DEVELOP A COMMUNITY **BENEFITS**
PLAN THAT SUPPORTS RIVERTOWN'S
COMMUNITY

45 MIN WORKSHOP & FEED BACK SESSION



A new
project has
been
proposed for
your town.



You are attending a meeting to help the developer design their Community Benefits Plan—the plan that supports Rivertown's community.

But before the meeting starts, let's take a look at Rivertown, the community in question, and learn more about the project.



Welcome to Rivertown, USA

- Population: 35,000
- Industrial waterfront
- Strong, engaged community organizations
- Heavy industry causes air quality problems
- High flood risk due to river
- Significant environmental justice issues including hazardous waste, diesel trucks polluting the air, wastewater, grid power, and coal employment



Environmental Injustice in Rivertown

- Much of Rivertown is used for fuel oil storage for regional gasoline and heating oil.
- Historically, Rivertown was **redlined**, meaning that the government dissuaded banks from providing home loans in this region, leading to disinvestment.
- Due to truck and air traffic, Rivertown has poor air quality and high asthma rates.
- Rivertown is densely populated and has a large portion of low income and nonwhite residents and residents who speak English as a second language.
- Rivertown has not received significant government investment to date.

Hydrogen Fueled Food Distribution Center

- Large food distribution center (FDC) in your town
- 100+ truck bays operating 24/7
- Provides jobs to the area, but causes a lot of noise and air pollution
- **The FDC and We Truck, a developer, are proposing to swap out the diesel trucks for Hydrogen Fuel cell trucks**
- Let's dive into what this transition might mean for Rivertown



What changes could this mean for Rivertown?

Pros

- Jobs in construction and at Hydrogen fueling station
- Less oil stored on the River
- Reduced Green House Gases that contribute to climate change (like taking 450 cars off the road!)
- Net reduced air pollution from Hydrogen Fuel Cell trucks: no Particulate Matter, Ozone or Nitrogen Oxides
- Reduced noise from trucks

Cons

- Addition of Hydrogen fueling station at FDC.
- Hydrogen would be produced elsewhere possibly in another EJ community
- Storage of Hydrogen at FDC
- Increased truck traffic to carry Hydrogen to the fueling station
- Potential increased fire and explosion risk

Community Benefits Plans (CBPs)

You have been asked to help the FDC and We Truck develop a Community Benefits Plan (CBP), which is required in order for them to apply for federal funding for this project.

The Community Benefits Plan is an important part of the proposal, it counts as 20% of the projects overall score

So, what is a Community Benefits Plan?





Your Job: Develop a CBP

Rivertown is identified as a Disadvantaged Community.

FDC and We Truck are seeking funding from a Bipartisan Infrastructure Law program related to Climate Change, so the project requires a CBP.

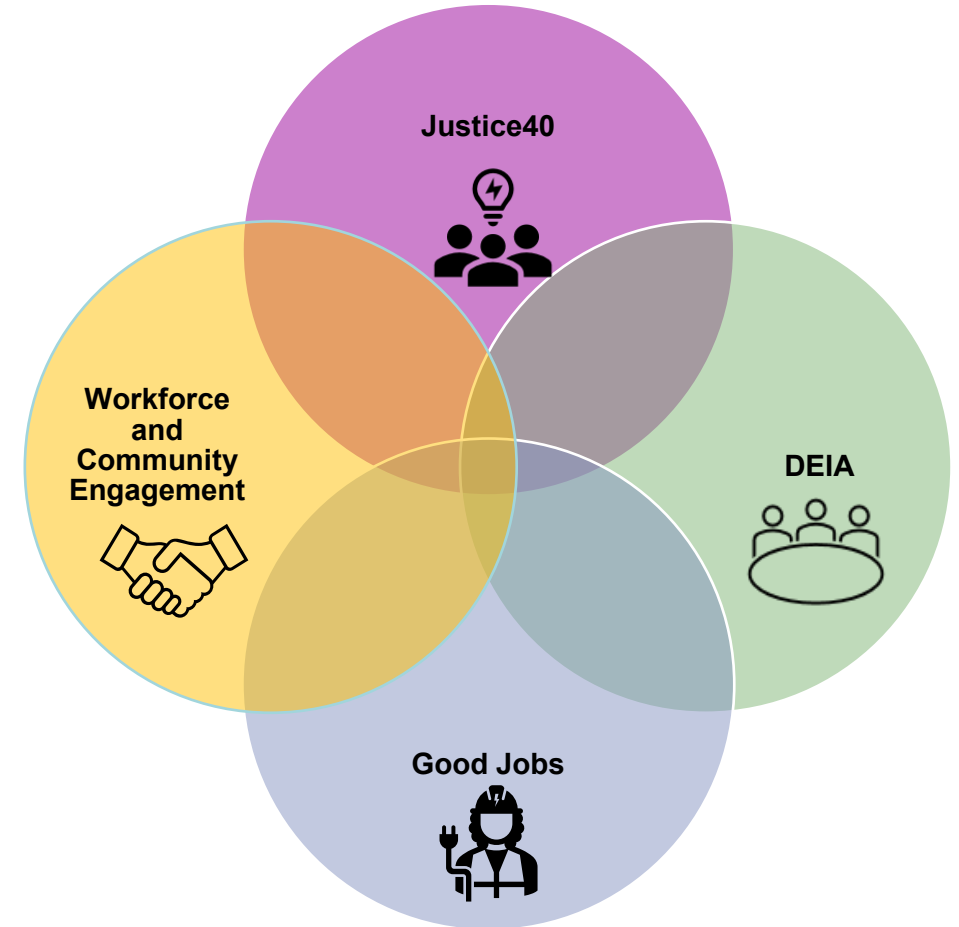
FDC and We Truck have invited you to a meeting to help them with the Community Benefits Plan for this project.

They have a rough draft, but it needs work!

And keep in mind, CBPs require resources. You will have to figure out how to best allocate the projects limited resources to create a strong CBP.

Community Benefits Plan: Four Priorities

- **Workforce and Community Agreements**
 - Meaningful engagement with community and labor partners leading to formal agreements
- **Good Jobs**
 - Create good-paying jobs to attract and retain skilled workers and ensure workers have a voice on the job over decisions that affect them (wages, working conditions, safety, etc.)
- **Diversity, Equity, Inclusion, and Accessibility (DEIA)**
 - Equitable access to wealth building opportunities (teaming, access to good jobs, business and contracting opportunities, etc.)
- **Justice40**
 - Meet or exceed the objectives of the Justice40 initiative that 40% of benefits accrue to disadvantaged communities



Planning Board



Build Rivertown's Community Benefits Plan:
How can this Hydrogen Project most support Rivertown and its residents?

You'll develop your plan in 4 stages (~10 minutes per stage)

Background and Rivertown Perspectives	Facts about Rivertown	Justice40 Priorities	PERSPECTIVE 1 Ronny	PERSPECTIVE 2 Joseph	PERSPECTIVE 3 Charlie	PERSPECTIVE 4 Della
<ul style="list-style-type: none"> Resident in an Environmental Justice Community Top 25 fastest growing of power plants Top 25 for total of water planning Top 25 for proximity to hazardous waste facilities Top 25 for diesel portables motor equipment Top 25 for environmental challenges Top 25 for legacy pollution Top 25 for health proximity Top 25 for energy and commercial heating fuel Highest 25 for energy sector 	<ul style="list-style-type: none"> Decrease energy burden in Disadvantaged Communities Decrease environmental burdens and burdens for Disadvantaged Communities Increase priority to clean energy technology (e.g., solar, wind) made and installed in Disadvantaged Communities Increase access to low cost capital in Disadvantaged Communities Increase clean energy workforce training and workforce development in Disadvantaged Communities Increase clean energy jobs, job quality, and job training for workers from Disadvantaged Communities Increase energy workforce in Disadvantaged Communities 	<p>PERSPECTIVE 1 Ronny</p> <p>Ronny is a Black father who has been a contractual employee at risk of losing his job. He is concerned about the cost of gas, electricity, and water and the impact on his family and his ability to provide for his family. Charlie is a member of the Long-Haul Truckers Union and came along with Ronny to see any changes in the future energy infrastructure to be implemented to improve conditions.</p>	<p>PERSPECTIVE 2 Joseph</p> <p>Joseph is a Black resident who often has to be the primary caregiver for his mother who suffers from asthma. Joseph is only able to visit his mother in the hospital at night, and has been hospitalized by the food distributor because she has been driving past his apartment every day. Joseph would like to see any changes in the future energy infrastructure to be implemented to improve conditions.</p>	<p>PERSPECTIVE 3 Charlie</p> <p>Charlie is a Black resident who works in the construction industry. He is concerned about the cost of living and energy in his community as a single parent who works two jobs to support his wife, two young girls, and his elderly mother. Charlie would like to see any changes in the future energy infrastructure to be implemented to improve conditions.</p>	<p>PERSPECTIVE 4 Della</p> <p>Della is a Black resident who works in the retail industry. She is concerned about the cost of living and energy in her community as a single parent who works two jobs to support her wife, two young girls, and her elderly mother. Della would like to see any changes in the future energy infrastructure to be implemented to improve conditions.</p>	
Engaging Communities and Labor Meaningful engagement with community and labor partners leading to formal agreements.						
Place initial card here Engaging Communities and Labor						
Good Jobs: Investing in America's Workforce Create good-paying jobs to attract and retain skilled workers and ensure workers have a voice on the job over decisions that affect them (wages, working conditions, safety, etc.)						
Place initial card here Good Jobs						
Advancing Diversity, Equity, Inclusion, and Accessibility Equitable access to wealth building opportunities (loans, access to good jobs, business and contracting opportunities, etc.)						
Place initial card here DEIA						
Justice40 At Least 40% of Project Benefits to Disadvantaged Communities. Meet or exceed the objectives of the Justice40 Initiative that 40% of benefits accrue to Disadvantaged Communities.						
Place initial card here Justice40						

Ground rules:

Each section needs a least 1 benefit.

You can choose to keep or revise the preliminary plan.

You can choose to pool chips or not.

You're encouraged to use all your chips.

Sample Benefit Card

Benefit title and description

Cost in Chips

DOE considers good Benefits to be:
Specific,
Measurable,
Assignable,
Realistic and
Time-based

DEIA

Subsidized Transportation Costs

Developer agrees to subsidize the cost of transportation for all of its employees.

COST 3 CHIPS Stack chips here → **3**

UPGRADED VERSION
4 CHIPS
In addition to subsidized transportation costs, developer funds a bus for members commuting from the local area.

Color of the card indicates the category of the benefit

Additional cost to upgrade or downgrade

Introductions and Getting Started!

- **Step 1: Say Hi to each other, introduce where you're from and why you joined today.**
- Read Rivertown Residents' Perspectives out loud.
- **Step 2: Discuss Community and Labor Engagement**
- Discuss the proposed Community and Labor Benefit:
 - Keep, Strengthen, Weaken, Remove.
- Take turns reading your Community and Labor Engagement benefits.
- Select additional benefits you would like to add
- Pool chips or not.
- Each participant has one opportunity per round to add a benefit or not (or create your own benefit).
- When each participant has taken a turn, move on to the next benefit category.

Principles for Participation

- Step Up, share your ideas.
- Step Back, make sure everyone else has space to share their ideas too.
- Be Considerate, listen to others.
- Be Respectful, treat others like you hope to be treated.
- Be Collaborative, please.

Rivertown Residents' Perspectives

There are many people who are invested in this CBP and will be affected by the project. Not everyone could make it to today's meeting. Since your goal is to develop a CBP that will serve Rivertown best, please take a moment now to familiarize yourselves with a few people who need to be considered in the CBP.



Perspective 1 - Ronny

Ronny is a truck driver who has been a contracted employee of FDC for over 10 years. In recent years, he has felt the impacts of inflation and struggled to provide for his family. Despite his tenure with FDC, he does not have good employee benefits. He is a member of the Long-Haul Trucker's Union and cares deeply that FDC make concrete commitments to its current employees.

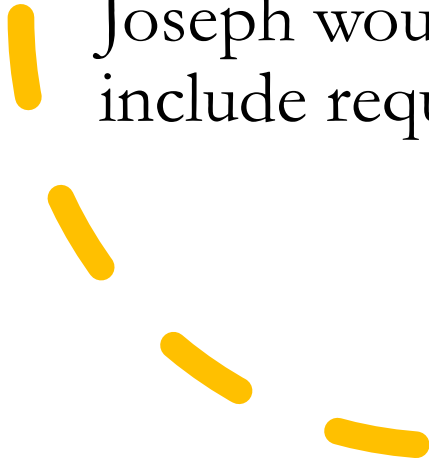
HARNESSING HYDROGEN | **Build Rivertown's Community Benefits Plan:**
How can this Hydrogen Project most support Rivertown and its residents?

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			Ronny Ronny is a truck driver who has been a contracted employee of FDC for over 10 years. In recent years, he has felt the impacts of inflation and struggled to provide for his family. Despite his tenure with FDC, he does not have good employee benefits. He is a member of the Long-Haul Trucker's Union and cares deeply that FDC make concrete commitments to its current employees.			
Place initial card here Engaging Communities and Labor						
Place initial card here Good Jobs						
Place initial card here DEIA						



Perspective 2 - Joseph

Joseph is a local resident who lives next to the highway in Rivertown. As someone who suffers from asthma, Joseph is very invested in improving Rivertown's air quality, and has been bothered by the Food Distribution Center's diesel trucks driving past his apartment every day.



Joseph would like to see any changes in the town's energy infrastructure include requirements to improve air conditions.

Perspective 3 - Charlie


Charlie is a Rivertown Fire Marshall. They care deeply about the safety of their city. They have heard some rumblings around town that hydrogen may pose some safety risks and wants safety to be prioritized in the CBP.





Perspective 4 - Delia

Delia is a longtime Rivertown resident who is very concerned about the cost of living and energy in her community. As a single parent who works two jobs to support her kids, she wants good jobs and industry but also wants a bright future for her children. She is frustrated by the noise in her neighborhood, which is close to the FDC, and worries that the exhaust from the trucks is hurting her family's health.



Reflection and Discussion Questions

- What did you think about this activity?
- What did you learn about CBPs through this activity?
- Would you feel comfortable with this project and CBP in your community?
- How would you want to a CBP for your community to be developed?

Questions?

Emily Brooks, PhD

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Apply to review FECM projects →



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Extra slides follow



Examples of Commitments: CarbonSAFE Phase II projects

- Partnerships with universities and community-based organizations with local and social science expertise
- Establishing two-way engagement mechanisms
- Partnerships with technical colleges and training centers to develop relevant curriculum
- Adoption of inclusive recruitment strategies
- Enhance project team capacity and build cultural competency
- Collect baseline information for air quality monitoring



All FECM equities have justice implications

Environmental Justice

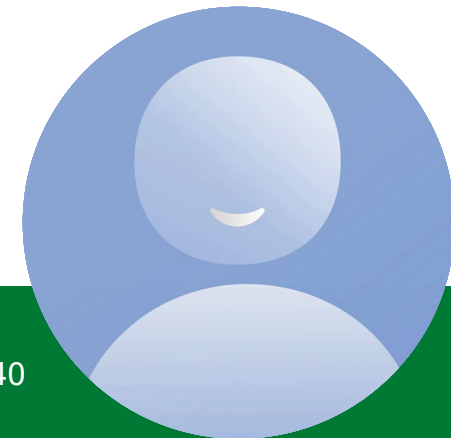
- Remediation of legacy pollution via critical minerals and carbon conversion processes
- Reduction of air pollution emissions from carbon management, hydrogen, SOFCs, technologies etc.
- Siting of infrastructure (pipelines, demos, etc.)
- Reduced methane emissions
- Enabling clean energy technologies through critical minerals work

Energy Justice

- Workforce development through UTR/HBCU-MSI and MLEF
- Access to distributed clean energy via hydrogen, critical minerals
- Technical assistance through Communities LEAP
- Tribal engagement
- Siting of infrastructure (pipelines, demos, etc.)

Cross-Cutting Enablers

- Sustained and meaningful engagement with tribes and communities
- Incorporating EEJ expertise into existing processes
- Metrics and data collection
- Equitable funding processes
- Equity-focused RDD&D



Snapshot of J40 & SCI/CBP Implementation in DOE Activities

CBP Framework for FOA Design and Implementation

- Increase use of funding mechanisms that broaden participation and access (e.g. prizes)
- **Require input from community and Tribal organizations (e.g. CBOs) be part of project development phase**
- **Include DEIA and justice criteria in merit review process**
- Train reviewers in DEI and justice, and/or have specific expert reviewers for these topics
- Accessibility across activities (e.g. call-in RFI responses)

DOE's Equity Action Plan and Activities

- Fund research specifically addressing equity questions (e.g. remediation projects, understanding potential lifecycle co-benefits and unexpected consequences of FECM technologies, etc.)
- **Incorporate EEEJ considerations into all RDD&D projects** (e.g. including DAC layer in CO2 pipeline analysis)
- Increase partnerships with HBCUs and other MSIs
- Who owns infrastructure (e.g. for CDR, opportunity to design equitable governance and ownership frameworks)

- Metrics and Reporting
- Collaboration and coordination across DOE

Community and Tribal Engagement

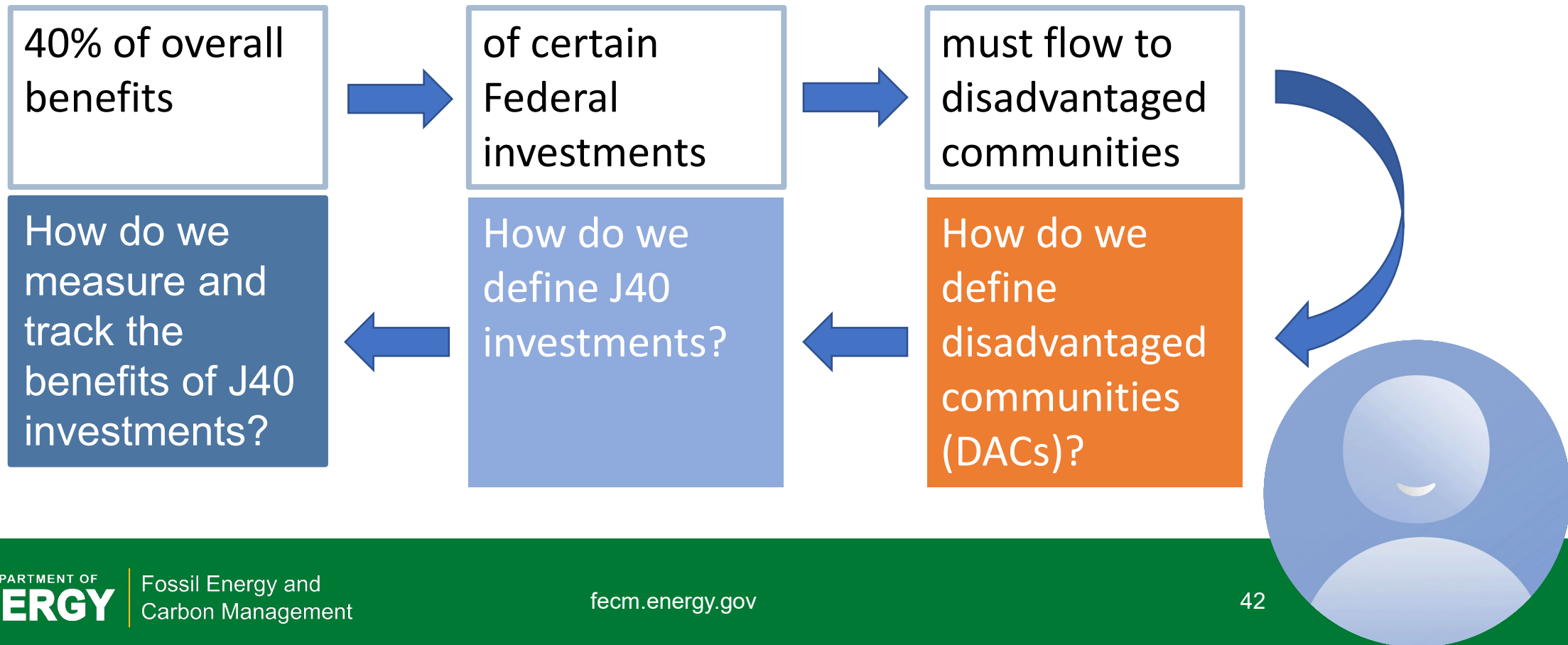
- **Meaningful lifecycle engagement with disadvantaged communities and tribes – early and often; incorporate feedback**
- Increase partnerships with facilitators and intermediaries
- Require and incentivize engagement as part of project proposals

These types of activities are already happening across DOE



Justice40 Initiative

EO 14008, Sec. 223: 40% of the overall **benefits of certain Federal investments**—including investments in clean energy and energy efficiency; clean transit; affordable and sustainable housing; training and workforce development; the remediation and reduction of legacy pollution; and the development of clean water infrastructure—**must flow to disadvantaged communities.**



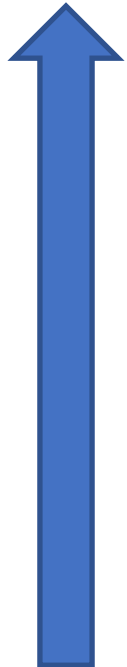
Credit: DOE-ED

DOE Justice40 Policy Priorities



1. Decrease energy burden in disadvantaged communities (DACs).

2. Decrease environmental exposure and burdens for DACs



3. Increase parity in clean energy technology (e.g., solar, storage) access and adoption in DACs.

4. Increase access to low-cost capital in DACs.

5. Increase clean energy enterprise creation in DACs.

6. Increase the clean energy job pipeline and job training for individuals from DACs.

7. Increase energy resiliency in DACs.

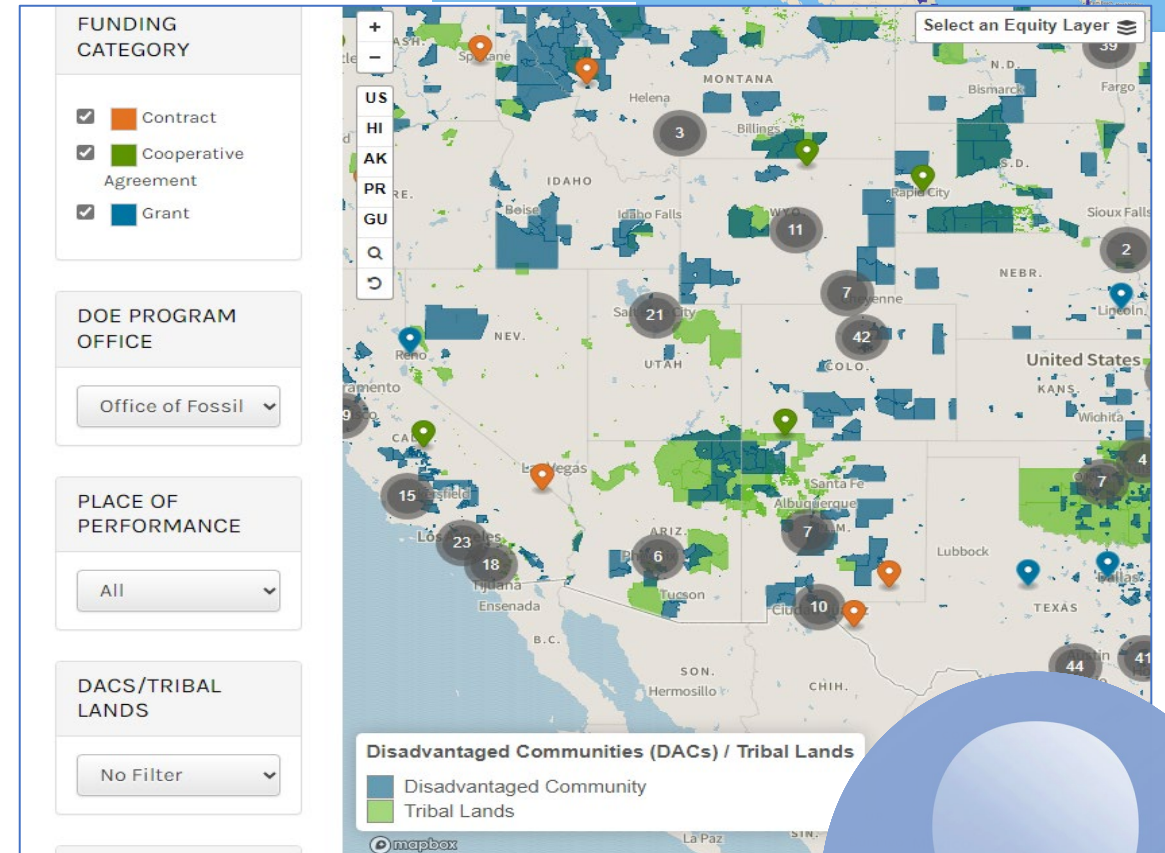
8. Increase energy democracy in DACs.



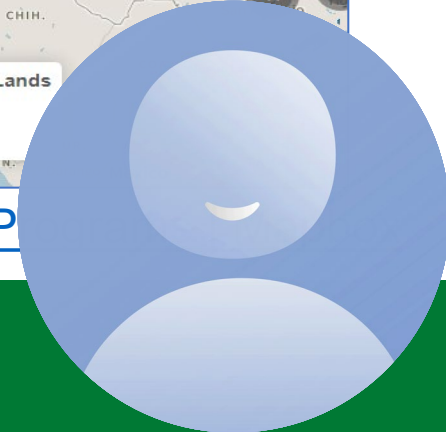
J40 Disadvantaged Community DOE Interim Definition

- DOE working definition for DACs focuses on cumulative burden and includes data for thirty-six indicators
- 18.6% of all US Census tracts
- This definition is to be used across all DOE programs for Justice 40 implementation
- The [DOE EJ Dashboard \(BETA\)](#) is DOE's mapping tool that allows users to produce reports on the DOE investments for census tracts DOE has categorized as DACs and recognized tribal lands.

***The DOE Environmental Justice Dashboard shows census tracts categorized as DACs in blue and federally recognized tribal lands and U.S. territories in green.*



[J40 DACs Only for DOE Covered P](#)



Credit: DOE-ED



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- Congress BIL/IRA
- WH Justice40 Initiative
- WH requirements for EJ Plans
- WH CEJST
- DOE Energy Justice Policy
- DOE EJ Strategic Plan
- DOE CBPs
- DOE EJE Working Groups (REDI, GSTF)
- FECM SCI
- FECM EJ-informed RDD&D
- FECM relationship building with DACS and EJ communities

- WH Orders on Tribal Consultation
- DOE Order 144.1 revision
- DOE Tribal Energy Steering Committee
- FECM collaboration with IE (conferences, relationship building, SME)
- FECM Tribal RDD&D Partnerships and Applicants (e.g., UOW)
- FECM UTR with Tribal Colleges
- FECM Tribal Sovereignty-informed RDD&D
- FECM relationship building with Tribal communities

EEJ Policies and Strategic Priorities

Environmental
Justice

Community &
Tribal
Engagement

Energy Jobs

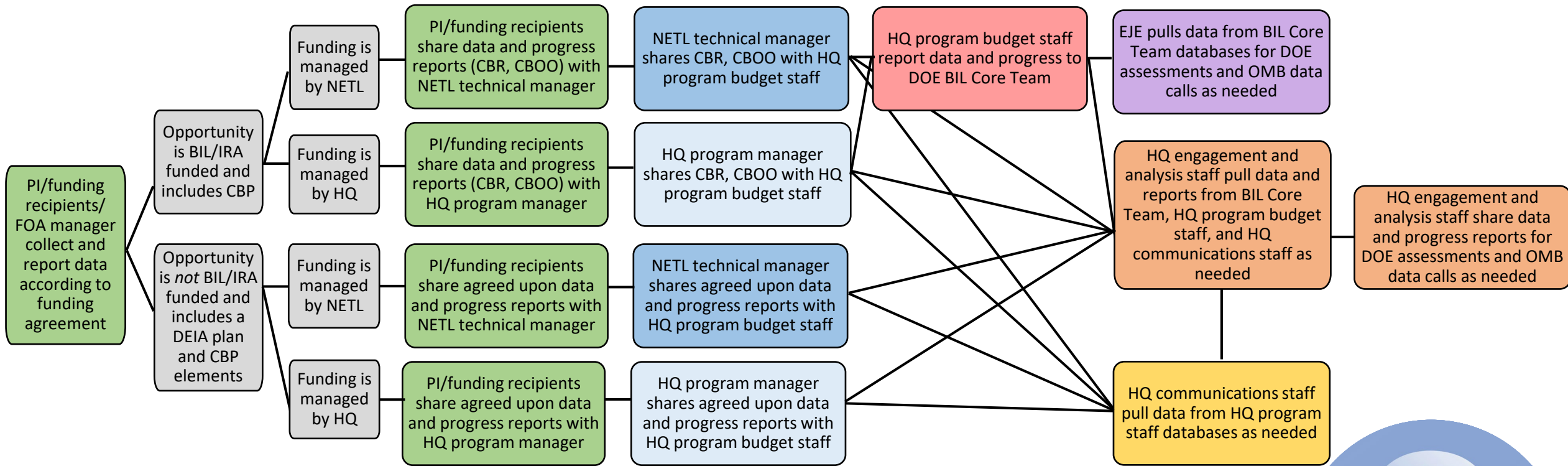
Equity

- Congress BIL/IRA
- DOE Workforce and Labor requirements for CBPs

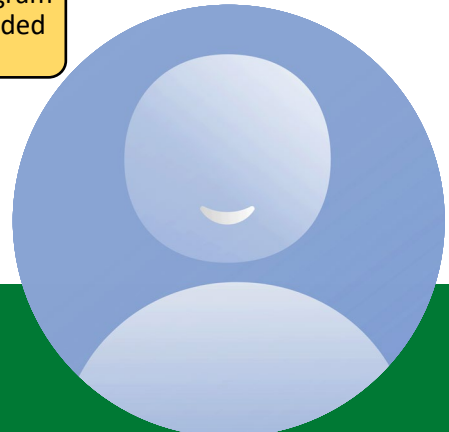
- Congress BIL/IRA
- WH requirements for Equity Action Plans
- DOE Equity Action Plan (note R&D pillar)
- DOE DEIA requirements for CBPs
- FECM Equity Strategic W
- FECM collaboration w
- FECM UTR with MSIs
- FECM equity-inform

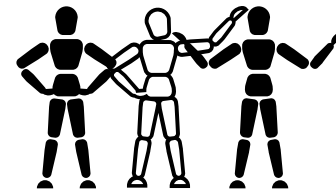


FECM-30 CBP/SCI Data collection and reporting processes



PI/funding recipients	HQ program managers	HQ engagement/analysis staff
NETL technical managers	HQ program budget staff	EJE
		HQ communications staff





Community Action and Successes

Rivertown has a strong history of successful community organizing. Here are some highlights:

- Fought construction of a power plant and won
- Community-led heat island mitigation strategies
- Improved local air quality by limiting engine exhaust from Rivertown Food Distribution Center (FDC) from which 37,000 truck trips depart yearly to distribute produce to millions of residents across 3 states.

The Pitch



- Hydrogen ("H₂") is the fuel of the future!
- It's cleaner, it's greener, it's quieter, and it will be great for the local environment and economy!
- We are dedicated to addressing Climate Change.

We propose to:

- Provide 100 hydrogen fuel cell trucks
- 5 years from approval to roll-out
- \$15 million federal share (DOE) & \$15 million from We Truck

What are Hydrogen Fuel Cell Trucks?

- Trucks that use Hydrogen as Fuel
- Fuel uses hydrogen and oxygen to create electricity.
- More energy efficient than combustion engines
- Fuel cells emit only heat and water,
- Eliminating concerns about air pollutants or greenhouse gases.



Fuel Cell Trucks can be fueled at stations like Gas Stations

Example Hydrogen Fueling Stations

Source: Governor David Ige licensed under CC BY NC ND 2.0



Hydrogen would be stored in 700-bar hydrogen storage tanks at the Food Distribution Center. The tanks have a similar safety profile to gasoline storage at gas stations.

Example Hydrogen Storage.

Source: Dr. Artur Braun licensed under CC BY SA 4.0

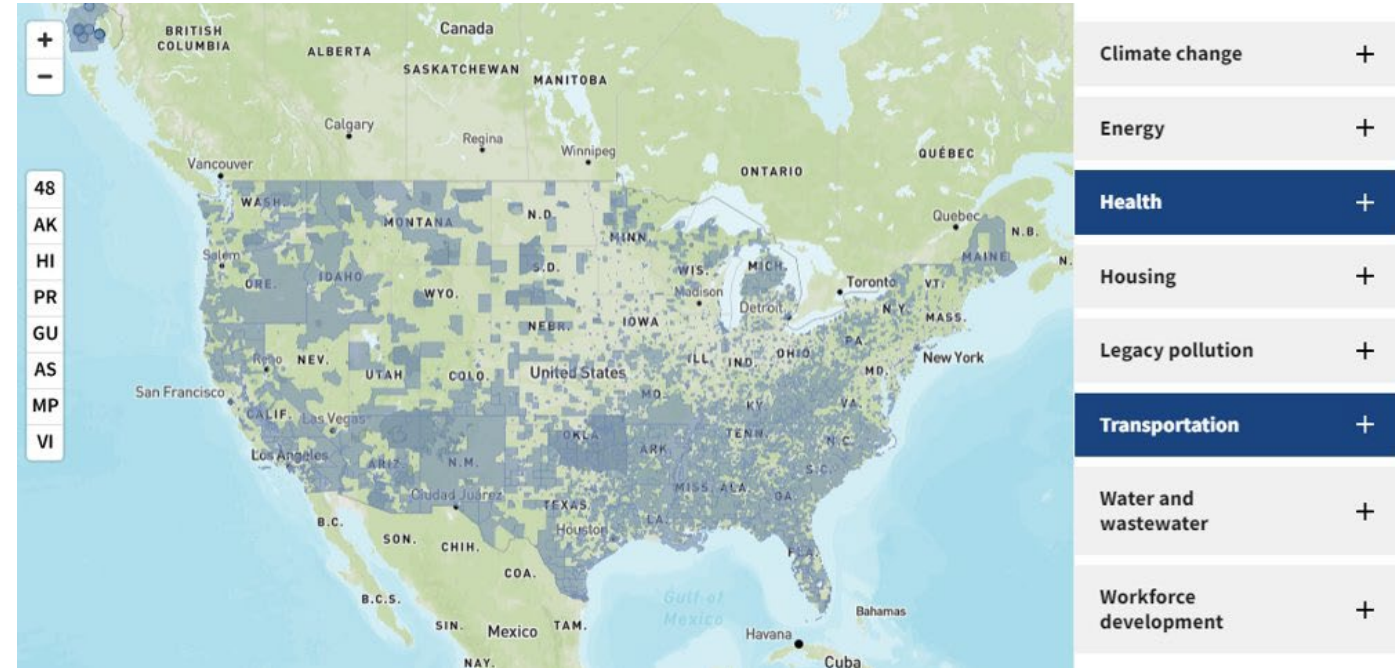
What is a Community Benefit Plan?

- A new part of many DOE funded projects.
- It explains how the project developer will benefit key stakeholders and the surrounding community.
- Projects funded by the Bipartisan Infrastructure Law (BIL) from the Department of Energy must include a CBP in their application.
- It is scored as part of their application but can be further developed with community engagement following an award.
- During the life of the DOE award, DOE will evaluate the recipient's progress on their CBPs when deciding whether to continue funding a project.

[Explore the map - Climate & Economic Justice Screening Tool \(geoplatform.gov\)](https://www.geoplatform.gov)

What is Justice 40?

Justice40 is a presidential initiative that seeks to address environmental and social injustice by ensuring that at least 40% of the benefits of climate-related federal funding go to Disadvantaged Communities (DACs).



- **November 2022**, CEQ CJEST v1.0 Released
- **27,248 census tracts** as disadvantaged (36.8% total U.S. census tracts)
- **~28% of the total U.S. population** lives in a CEJST disadvantaged community

DOE's Justice40 Priority Benefits

1. **Decrease** energy burden in Disadvantaged Communities (DACs).
2. **Decrease** environmental exposure and burdens for DACs
3. **Increase** parity in clean energy technology (e.g., solar, storage) access and adoption in DACs.
4. **Increase** access to low-cost capital in DACs.
5. **Increase** clean energy enterprise creation and contracting in DACs.
6. **Increase** clean energy jobs, job pipeline and job training for individuals in DACs.
7. **Increase** energy resiliency in DACs.
8. **Increase** energy democracy, including community ownership, in DACs.

Supplemental Background on Rivertown and the Proposed Project



Rivertown USA

Welcome to Rivertown, USA. Rivertown has a population of 35,000 and is well known for its industrialized waterfront that contains many essential industries for the region. Rivertown is also known for its strong community organizations. Residents of Rivertown want to see their community thrive, and they want to grow green space on the waterfront, which is currently inaccessible due to industry. The heavy industry also contributes to air quality problems. Being on the river, Rivertown also has a high flood risk related to climate change. The city has a 30-40% risk of flooding by 2030.

Before you start working on the community benefits plan, let's learn more about this community!



Rivertown is an Environmental Justice Community

- Top 5% lowest amount of greenspace
- Highest 3% for lack of indoor plumbing
- Highest 2% for proximity to hazardous waste facilities
- Highest 9% for diesel particulate matter exposure
- Highest 12% for wastewater discharge
- Highest 3% for linguistic isolation
- Highest 10% for traffic proximity
- Highest 20% for non-grid connected heating fuel
- Highest 45% for coal employment
- Highest 35% for energy burden



Economy

The median income for a household is \$30,000 and median income for a family is \$64,000. The national median household income is \$70,000. 22% of residents live below the poverty line.

Hydrogen Fueled Food Distribution Center

Rivertown is home to a large food distribution center called the FDC.

The FDC has 130 truck bays and trucks go through the distribution center 24 hours a day.

The FDC provides jobs to the region and is also the source of concern for residents because of the noise pollution and tailpipe emissions from the hundreds of diesel trucks that flow in and out of the center.

It's important to note that, though FDC provides fresh produce to 15 million people across 3 states, Rivertown is a food desert and residents lack access to affordable fresh produce.

A coalition of food distributors at the FDC and We Truck, a developer, are proposing to change the diesel trucks into Hydrogen Fuel cell trucks.

Let's dive into what this transition might mean for Rivertown.



We Truck

What pollution would be reduced locally from converting 100 diesel trucks to fuel cell trucks?

Because the only emission from fuel cell trucks is water:

- Reduction in Greenhouse Gas Carbon Dioxide (CO₂) released by 2,232 tons per year
 - This is equivalent to taking 450 passenger cars off the road for one year!
- Reduction in release of harmful pollutant nitrogen oxides (NO_x) by 2.6 tons per year.
- Nitrogen Oxides damage the lungs and respiratory system.
- Reduction in release of Particulate Matter PM 2.5 by 40 lbs per year.
- PM 2.5 contributes to asthma and other heart and lung disease as well as impacting child development.




The hydrogen will be produced via steam methane reforming with carbon capture in a town with a long history of energy plant emissions and environmental injustices.

The hydrogen will be transported to the Rivertown area via compressed gas tube trailers. About 7 tube trucks will need to stock the fuel tanks each day to sustain an average of 50 trucks filling their tanks every day. The proposal assumes other fuel stations will also be built along the trucking routes in the FDC delivery region.

Where does the Hydrogen come from?

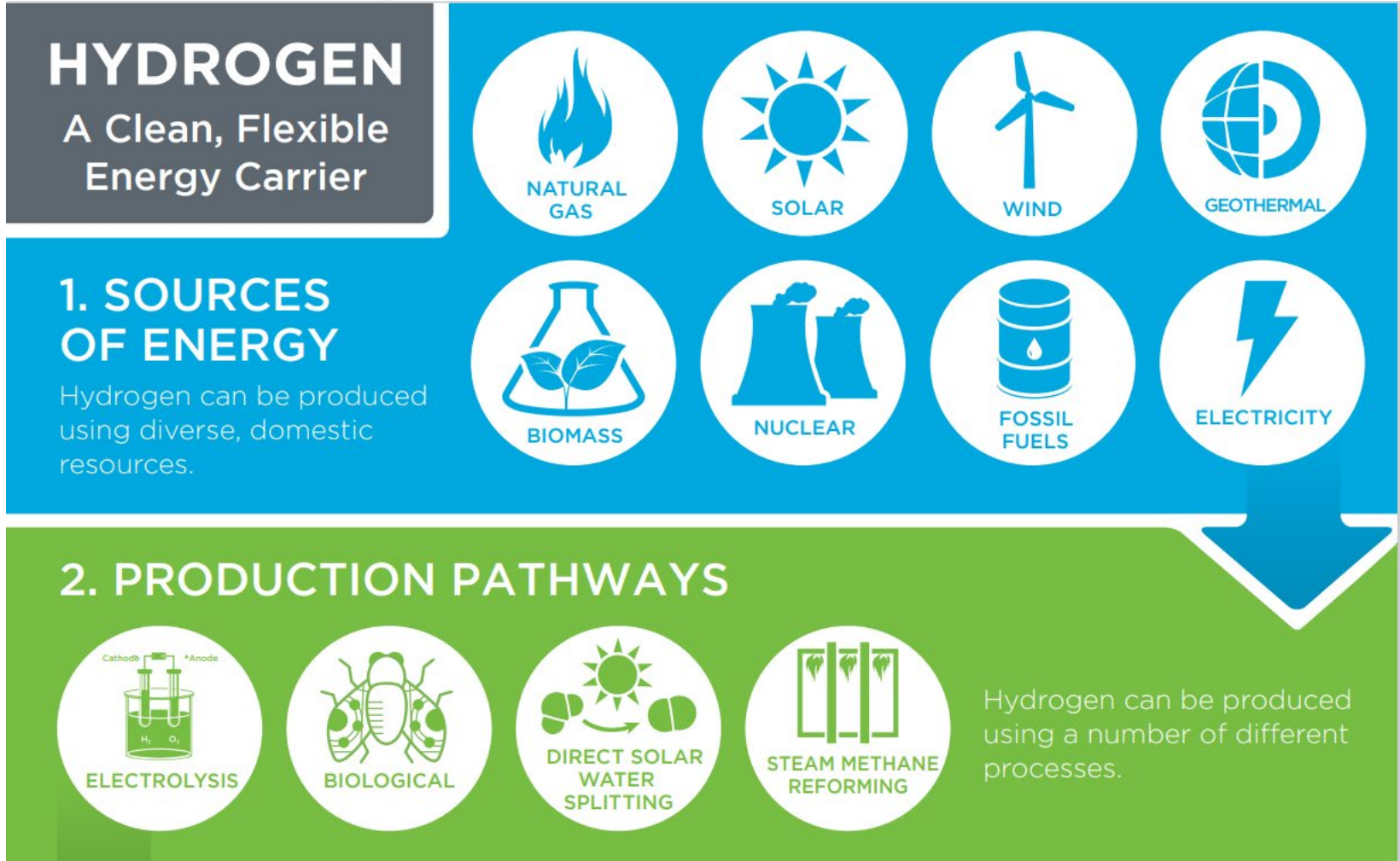
Hydrogen Tube Trailers Infrastructure



Carbon Footprint: 2
Cost: 2

Compressed tube trailers are used widely today to transport gases such as methane, oxygen, and others. This transportation method is used when relatively smaller amount of hydrogen is needed, such as at a fueling station.

How would Hydrogen be made?



Steam Methane Reforming (SMR)

- SMR currently generates 95% of the United States' hydrogen by converting natural gas or methane into hydrogen and carbon monoxide. Carbon dioxide and other impurities are then removed, leaving pure hydrogen.
- The overall carbon dioxide emissions associated with SMR are lower than gasoline combustion in an internal combustion engine.
- DOE's Hydrogen Hubs require carbon dioxide to be captured if Hydrogen is made from natural gas.
- And will support commercial production of Hydrogen produced by Renewable Electricity using Solar and Wind Energy.



Source: Dr. Artur Braun licensed under CC BY SA 4.0

Where and how will the Hydrogen be stored? Is it safe?

It will be stored in 700-bar hydrogen storage tanks at the Food Distribution Center. The tanks have a similar safety profile to gasoline storage at gas stations.

What will need to get built for this project? Where is it going to go?

In addition to the and hydrogen storage tanks, a hydrogen fueling station will need to be constructed at FDC.

Station construction will take ~2 years and will cost FDC ~\$2-5 million.

This will create dozens of local jobs throughout construction.

Investment in the distribution center also makes it more likely FDC will maintain a large presence in Rivertown.



Source: Governor David Ige licensed under CC BY NC ND 2.0