CLEAN AIR TASK FORCE

May 31, 2022

Carbon Capture and Storage

Informational Hearing

Joint Legislative Committee On Climate Change Policies, Assembly Natural Resources, and

Senate Environmental Quality

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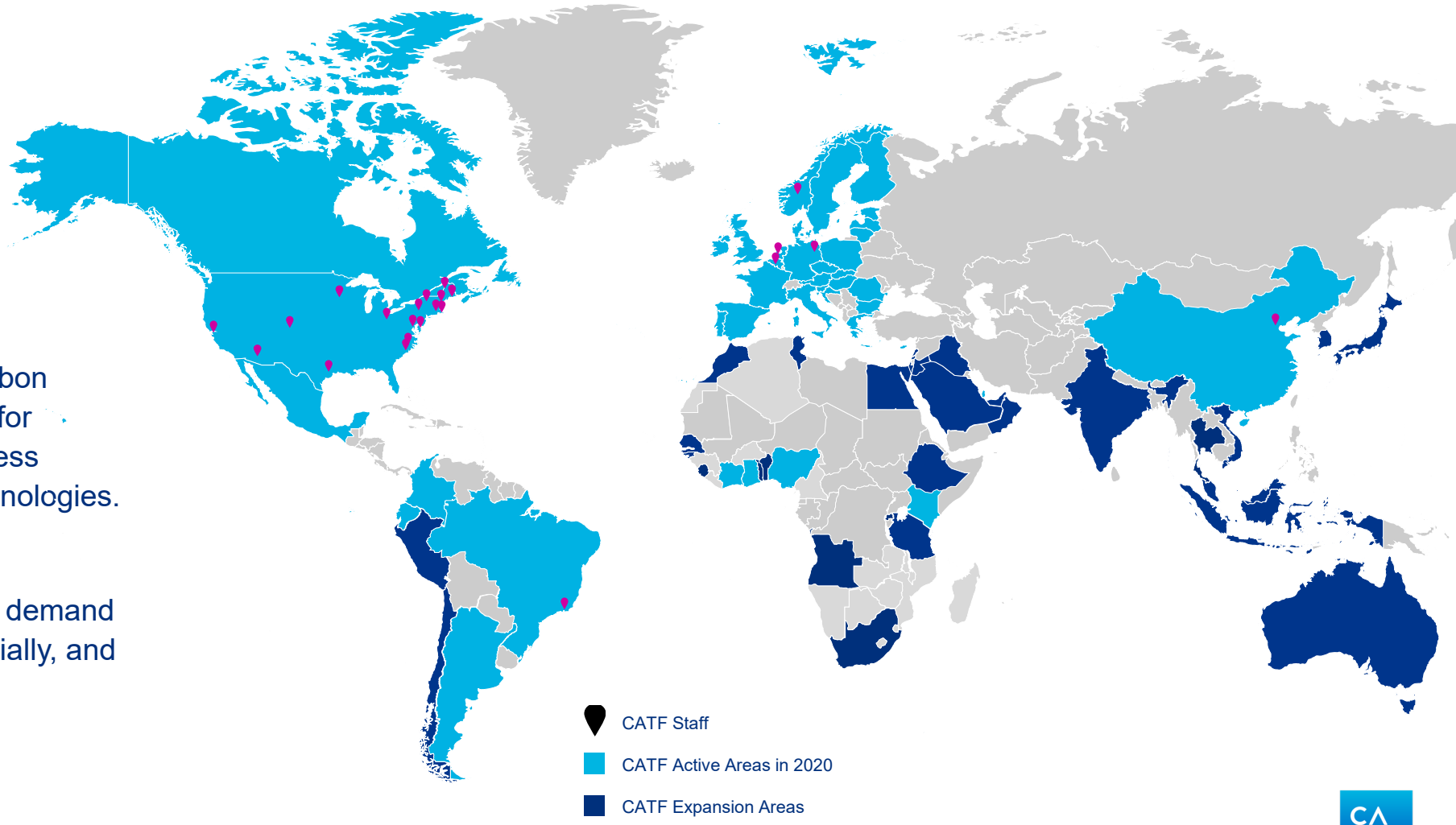
About the Clean Air Task Force

- Founded 1996
- Headquartered in Boston, 80+ global staff
- Funding is philanthropic
- **Our Mission:**
  Create an affordable, zero carbon energy system by advocating for pragmatic policies, new business strategies, and advanced technologies.
- **Our Vision**:
  Meet the world's rising energy demand in a way that is financially, socially, and environmentally sustainable.



The World Needs Multiple Options to Solve Climate Change

Carbon Capture: Capture can create co-benefits by reducing other air pollutants

- Most commercial systems rely on an amine solvent to remove CO_2.
- Air pollutants released in many industrial and power plants would degrade the amine solvent, so they must be removed, including:
  - Sulfur dioxide, particulate matter, some species of nitrogen oxides.
  - Removing these air pollutants reduces mortality and morbidity associated with secondary particulate matter

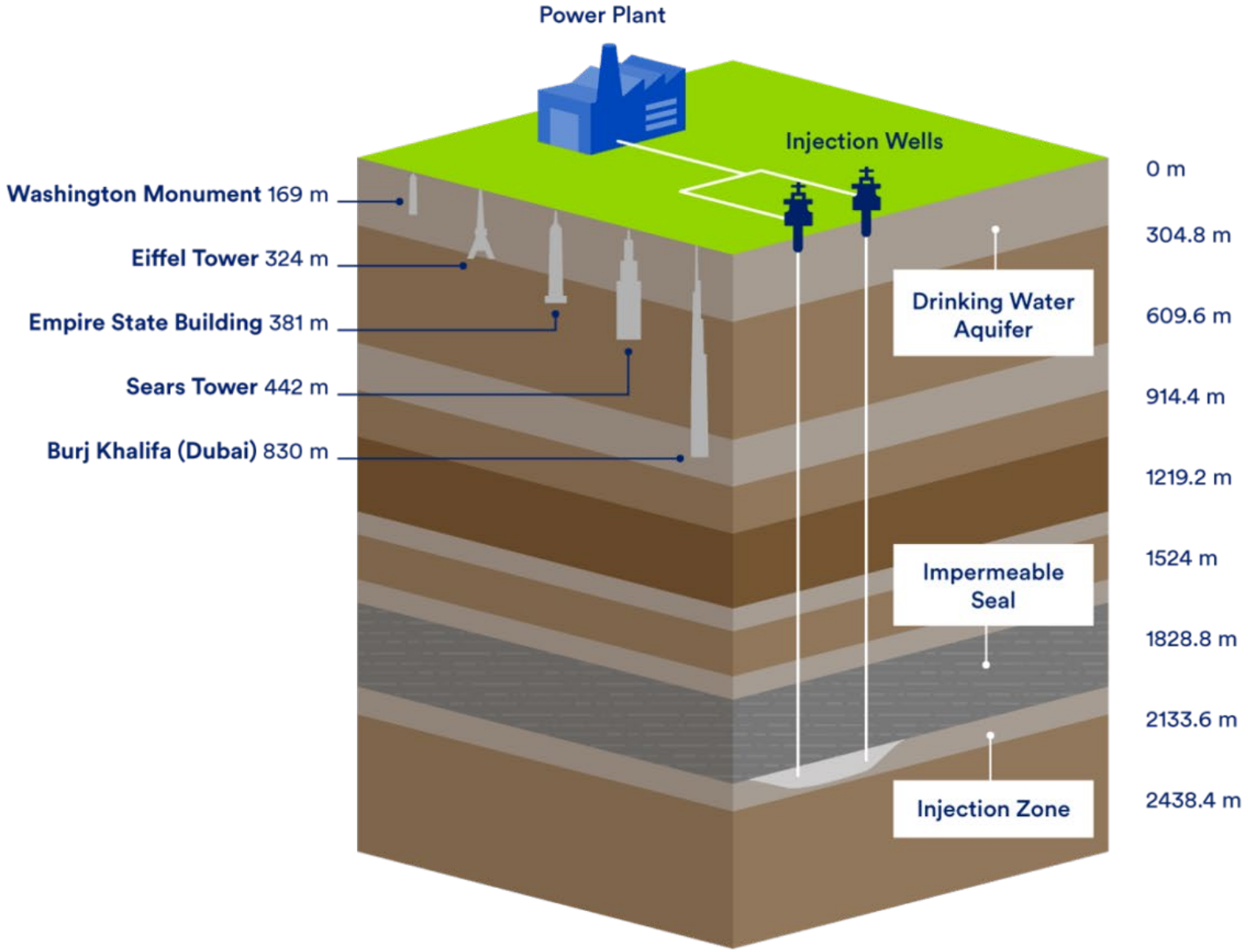
Estimated Carbon Capture Air Pollutant Reductions in Cement

Emission	Before Carbon Capture	After Carbon Capture	Percent Reduction
CO_2	3,604 tonnes/day	354 tonnes/day	90%
SO_2	7 tonnes/day	0 tonnes/day	100%
NOx	2.4 tonnes/day	1.05 tonnes/day	56%
PM_{10}	190 kg/day	15 kg/day	92%
$PM_{2.5}$	65 kg/day	7 Kg/day	70%

Source: Summary for Decision Makers on Large-Scale CCS on Cement - Based on Lehigh Edmonton CCS Feasibility Study. International CCS Knowledge Centre. [November 2021]

Permanent CO_2 Storage: Safe and permanent injection and storage of CO_2 in deep geologic formations is a well-understood and fully commercial practice in the U.S. and worldwide.

- The U.S. oil and gas industry has injected over **a billion tons of CO_2** into oil fields for enhanced oil recovery.
- Over a **quarter billion tons of CO_2** emissions successfully stored to date globally in saline geologic formations.
    - Since 1996, saline storage at the Sleipner Project in Norway has stored approximately 1 million tons of CO_2 annually. Injected deep under the bed of the North Sea.
    - ADM in Decatur, IL annually stores approximately 1 million tons of CO_2 captured from ethanol fermentation.
- EPA regulates and permits geologic storage under Class II and Class VI Underground Injection Control Programs.



CO_2 Pipelines: 50 years of experience transporting CO_2 in the U.S.

- The United States has over **5,000 miles of pipelines** that have transported **500 million metric tons** of CO_2 for 50 years **without a fatality**.
- To meet climate goals, this CO_2 pipeline network must expand, and government oversight should increase to make the risk of accidents vanishingly small.
- Pipeline and Hazardous Material Safety Administration (PHMSA) announced a **new rulemaking to update standards for CO_2 pipelines**, including requirements related to emergency preparedness, and response on May 26, 2022. Also, they announced:
  - Nationwide advisory bulletin to all pipeline operators underscoring the need to plan for and mitigate risks related to land-movements and geohazards.
  - A proposed $3.8 million fine of Denbury relating to a pipeline accident at Satartia, Mississippi which prompted PHMSA rulemaking

Community Engagement Through Coordinated Deployment

For CCS to be deployed successfully, EJ groups and local communities must have a seat at the table and CCS projects must be coordinated in a way that communities see the full benefit of these technologies

Coordinated deployment can be an effective means of empowering communities by:

- Providing communities with a seat at the table and ensuring that communities are engaged at the beginning of the process
- Providing transparency with communication throughout the process of building CCS projects
- Empowering communities with a one-stop-shop for coordination and information
- Ensuring fair value of pore space for landowners and ensuring the community receives the full benefit of these technologies

Policy Support for Carbon Management

Some key policy needs for climate-scale deployment of carbon capture

1. Explicit inclusion of CCS technologies in carbon neutrality legislative language
2. Coordination of CCS permitting processes
3. Policy guidance to clarify CCS eligibility in existing policies and regulations (SB100, inclusion of CCS in cap and trade)
4. Improved support mechanisms that provide certainty of project revenues
5. Certainty/clarity on pore space ownership

Opportunity for next generation policy:

1. Development of an organization to coordinate basin-scale management of CO_2 transportation and storage
2. Development of state-supported CCS demos with industry

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