



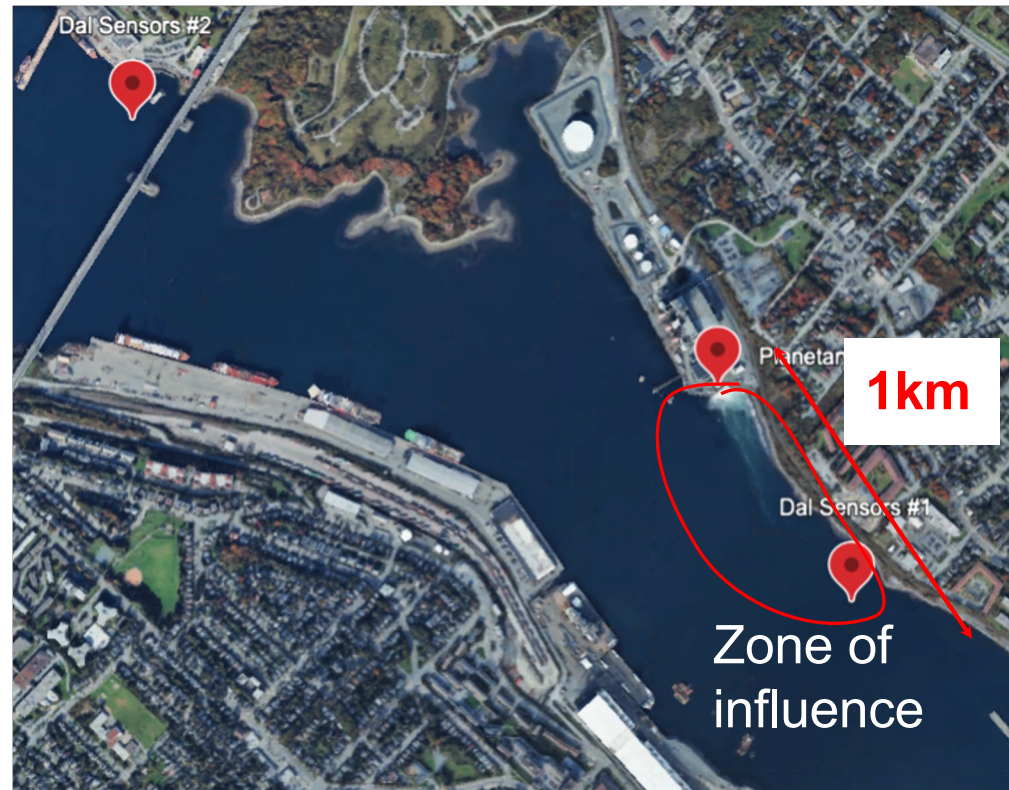
**Planetary's Nova Scotia OAE Project:**  
Creating the conditions for learning by doing—safely,  
transparently, and at a scale that begins to matter

**Phil de Luna, Forbes**

**C2S Convening**  
April 2026

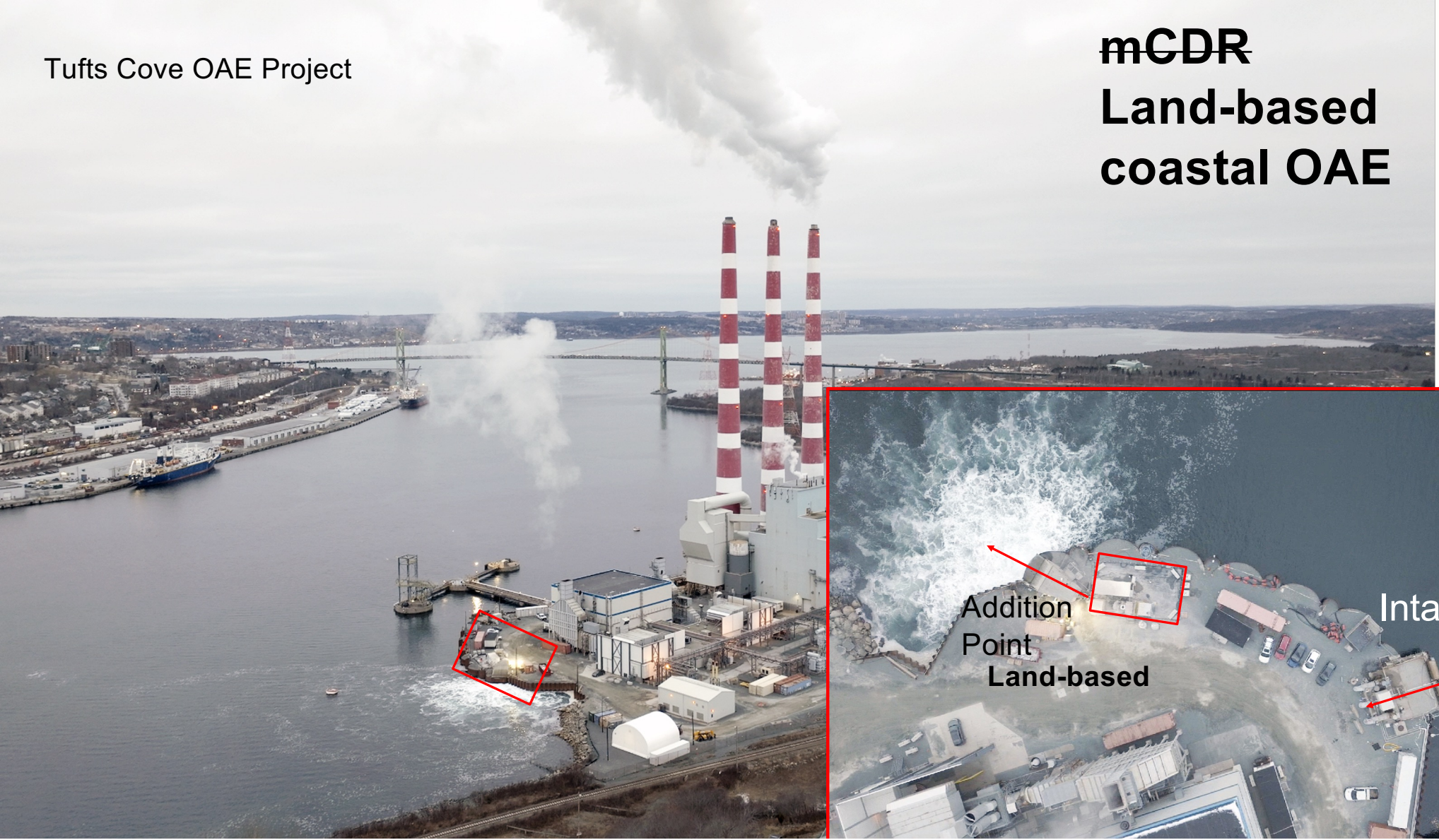
Welcome to Halifax and Halifax Harbour!

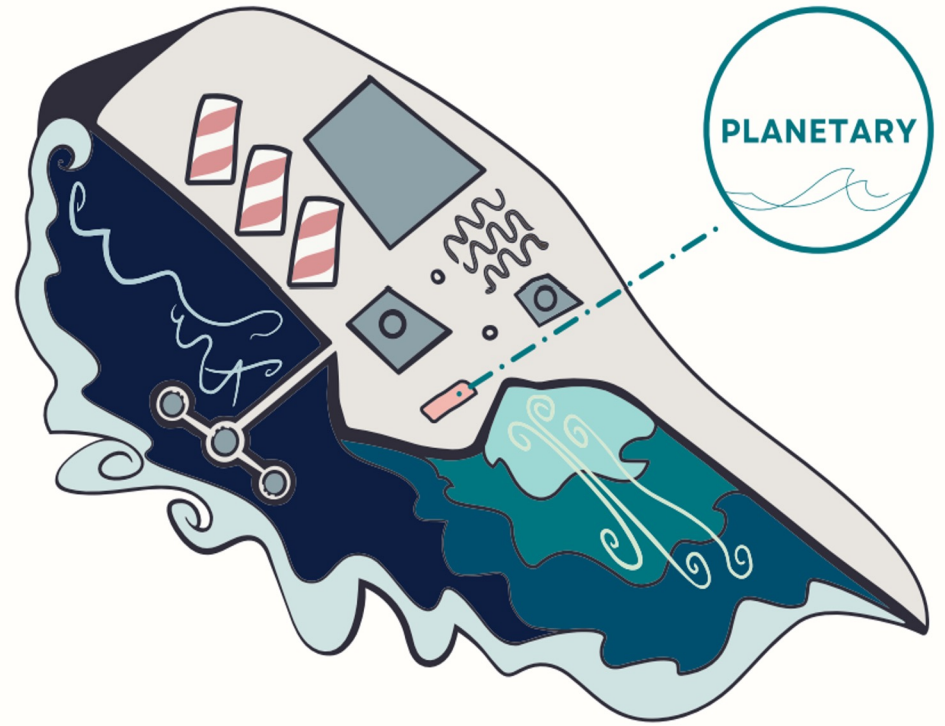
Home to junior hockey, pro women's soccer, and a world-leading CDR project



Tufts Cove OAE Project

**mCDR**  
**Land-based**  
**coastal OAE**





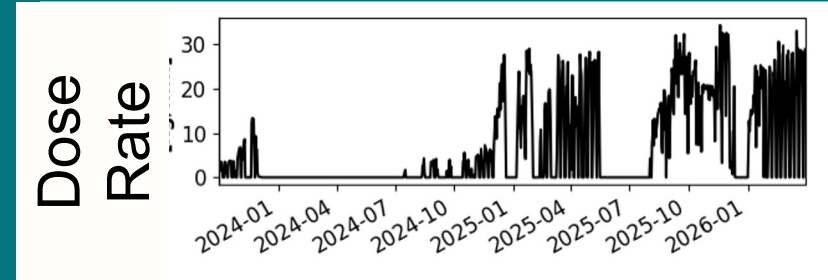
*Indigenized depiction of Tufts Cove site, designed by El'taqati'kw Digital Studio of the Mi'kmaq Confederacy of PEI, Featured in Planetary's 2025 Community Engagement Report.*

# What we've done (what we've dosed)

~10kg/min → ~30kg/min

## Dosing intermittently for >2.5 years!

- Facilitated HUGE volume of research
- Testing for any prolonged impact
- Uncovering many 'unknown unknowns'

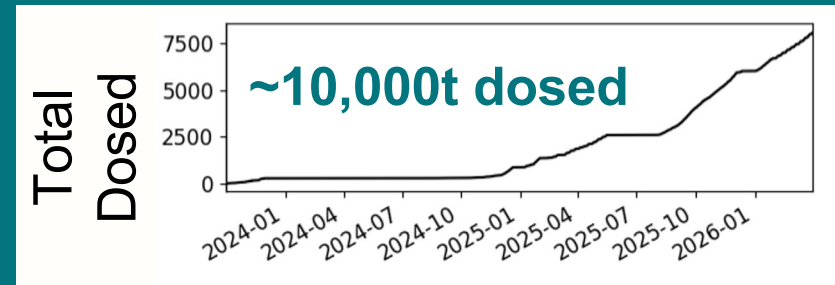


>2.5 years

End-of-pipe pH and TSS readings (permit compliance) AT ALL TIMES when dosing

Full boat surveys ~every 2 weeks

- 36 surveys in last 12 months! (62 total!)



Scale - only 3x higher dose rates

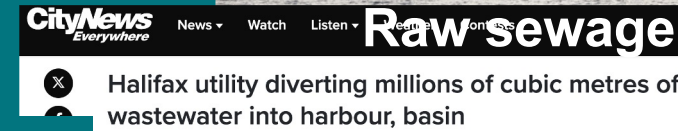
- We're not rushing here!
- Focus has been: Safety & Stability



# We are learning SO MUCH!

## Urban harbours are complicated!

- External contamination → multiple ‘stops’ → strain on the business (and the people in it!)
- Intense variability → difficulty tracking the alkalinity → difficulty advancing the MRV



## ‘Crediting’ is not straightforward

- Requires tight data management
- Uncovering complexity (e.g. multiple ‘dosing periods’, multiple feedstocks),
  - Routes chosen must be justifiable
- Verification is a fine-toothed comb



# We are learning SO MUCH!

**Ballast water!**



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What my team (of 6) thinks about every day...	At stake?
<p><b>Ensuring environmental safety</b> via comprehensive, consistent, and diligent monitoring</p>	<p>OAE writ-large</p>
<p><b>Ensuring regular credit delivery</b> via protocol compliance and verification activities</p>	<p>The project, the business → Planetary</p>
<p><b>Advancing MRV and broader field</b> via sensor deployment, lab incubations, collaborative research, peer-review publications,</p>	<p>&lt; then above</p>

Refilling  
age  
etres of



## Other key learning:

**Starting the operation = Hard**

**MAINTAINING the operation = Harder**

**(and absolutely essential because.....)**

1. Ecological safety cannot be tested in 'days/weeks'
2. Regulations & Governance cannot be formed in 'months'
3. Ops hazards arise over time (identified 100 in Q1)
4. Economically, it's the only path

# What does continuous Ops look like?

- Ops driven by real-time data

Safety status: All good!

Safety status: All good!

### TARGET VALUES

Target density	1.225	kg/L
Target w/w	25%	%
Target addition rate	30	kg/min

### MEASUREMENTS

Dose rate (current)	146.6	L/min
Dose rate (30-min avg.)	135.5	L/min
Tank volume	20166.0	L
Last density measurement	1.250	kg/L
Current w/w	27.6%	%
Addition rate	46.7	kg/min
Outfall level	223.2	mm

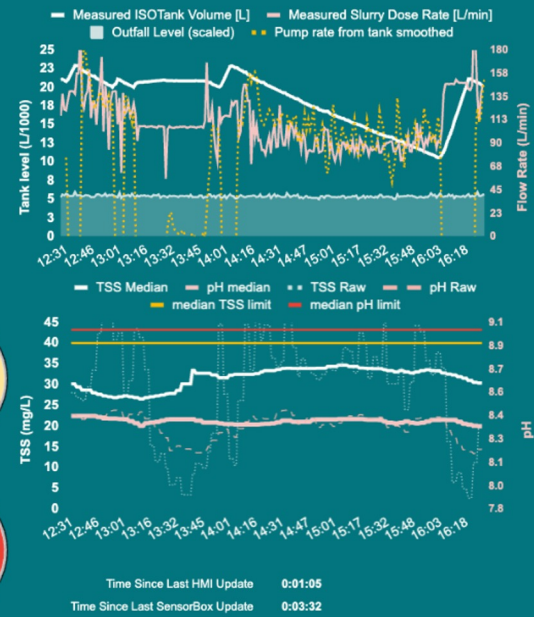
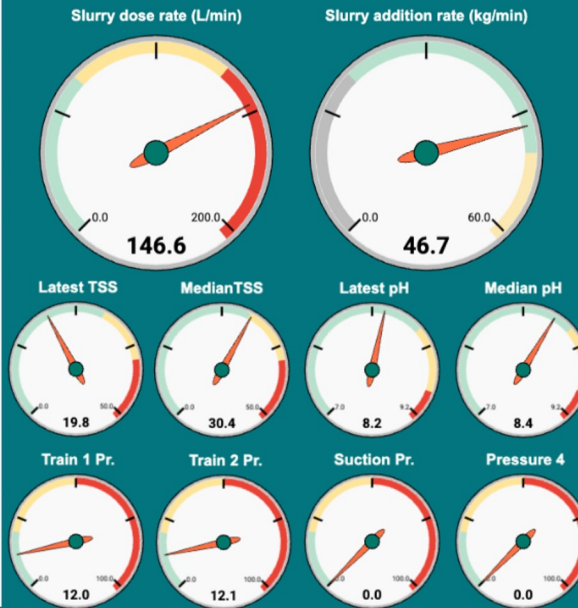
Latest pH	8.2	
Median pH	8.4	
Latest TSS	19.8	mg/L
Median TSS	30.4	mg/L

Train 1 Pr.	12.0	PSI
Train 2 Pr.	12.1	PSI
Suction Pr.	0.0	PSI
Pressure 4	0.0	PSI

### Last hour sensor data

	TSS	pH
1	2.60	8.17
2	4.90	8.18
3	6.45	8.20
4	8.79	8.20
5	11.20	8.23
6	16.23	8.29
7	19.80	8.32
8	23.92	8.33
9	30.19	8.35
10	30.21	8.35
11	30.51	8.36
12	32.29	8.37
13	33.81	8.40
14	33.89	8.40
15	33.98	8.40
16	35.83	8.40
17	37.75	8.40
18	42.71	8.41
19	44.15	8.42
20	45.17	8.42

### SensorBox strikes



- ### status checks
- outfall level
  - tank status low
  - tank status high
  - TSS status
  - pH status
  - pH over
  - HMI time status
  - SensorBox time status
  - tss strikes
  - pH strikes

Time Since Last HMI Update: 0:01:05  
 Time Since Last SensorBox Update: 0:03:32

# What does continuous Ops look like?



Planetary = 25 people

- Paper logs → Software
- Automated data QA/QC and processing
- Constant supply chain + logistics!!
- Emissions (LCA) accounting for EVERYTHING
- Non-stop troubleshooting
  - Things break, corrode, rust, clog, burst (esp in Halifax!)
  - Understanding complex data from a complex harbour
  - Shipping delays, supplier delays
  - Outfall outages, flow rate drops

**Over time....we are stabilizing,  
While also building a remarkable community....**



# Building Trust, Advancing Equity, & Strengthening Social License

IAP2 Framework: Inform, Consult, Involve, Collaborate, and Empower

CMM visit to our Tufts Cove site



Community Celebration Day at Tufts Cove

Fall program with Mi'kmaq Native Friendship centre



## Community collaborations and engagement:

- In 2025 alone: 40+ site visits 120+ community groups engaged, 40+ tea table conversations, 70+ presentations fostering meaningful dialogue.

## Indigenous stewardship:

- Strong engagement with Pitupaq, the Confederacy of Mainland Mi'kmaq (CMM), the APC, MEBO, CEPI and others
- Co-designed the fall programme with MNFC
- Ulnooweg research partnership (OAE and shellfish farming)
- **Two-Eyed Seeing Committee Established**
- CCIB PAIR certification due diligence Phase 1 achieved.
- **'Indigenised' 2025 Community Engagement Report with the El'taqati'kw Digital Studio.**

**Community Driven Action:** Lobster larvae eco-testing implemented in response to input from the fisheries community

Reach out to Diana anytime, or go find her today!  
[diana@planetarytech.com](mailto:diana@planetarytech.com)

# We are building the OAE foundation, one uncovered stone at a time

**MRV** - demonstrating what 'the bar' looks like, working hard to unblock complexity and raise the bar, AND providing an alkaline-plume so others can help!

**Enviro. impacts** - what is/isn't impacted under prolonged real world conditions

**Regulatory** - A strong and reproducible regulatory structure is now in place

**Governance** - Federal agencies can see it, understand it, and thus build capacity to ensure its done right.

**Community** - Moved from Informing/Engaging to Co-creating/Partnering

# And yet....major headwinds remain!



## OAE is massively underperforming in the broader CDR space

- **Current state of OAE:**

- Not 'certifiable' [e.g. EU]
- Still has low buyer confidence
- Very few pilots, and little/no CDR deliveries
- Companies reclassifying as something else, avoiding oceans altogether, and/or keeping a 'low profile'

### **Yet, pathways miles ahead have**

- 1) shakier fundamentals
- 2) more complex MRV
- 3) lower durabilities
- 4) similar enviro. risks
- 5) smaller scale potential





# Why? What are we doing wrong?

- We're still talking about (and framing it up as) 'mCDR'?
- 'Commercial' remains a dirty word?
  - Remember, credit revenue is facilitating all of this amazing learning!
- Still lacking legitimate 'co-benefits'
- Lacking constructive thinking, unity on how best to proceed. On balance, practitioners feeling scrutiny rather than support.
- Perfect remaining the enemy of the good?

Commercial ≠ "Commercial scale"  
Commercial ≠ profitable



## Why? What are we doing wrong?

- We're still talking about (and framing it up as) 'mCDR'?

Working in the ocean is hard...this field needs to work together, and fast.”

- Lacking constructive thinking, unity on how best to proceed. On balance, practitioners feeling scrutiny rather than support.
- Perfect remaining the enemy of the good?



It takes a village!

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Find me (Will Burt) on  
LinkedIn



Funding, convening,  
awareness, strategy



**DALHOUSIE**  
UNIVERSITY

+ MANY other  
collaborators



shopify

Frontier

stripe

No credit revenue  
NO PROJECT

CUR8



ISOMETRIC



The mechanism  
(this is also very hard)



Carbon  
Business  
Council



Carbon  
Removal  
Alliance

They/we need  
help!