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# Low Mass Emission EDR Solutions for ECMPS 2.0

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**EPRI CEMUG 2023 – Louisville, KY**  
May 16<sup>th</sup>, 2023

# Agenda

- Background
- LME EDR Options
- Our approach
- Technical architecture
- Functional design
- Lessons Learned
- Conclusions



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# LME EDR History

- ECMPS Client tool has support LME EDR Generation since 2009
- ECMPS currently generates 263 of the 505 LME EDRs submitted
- On stakeholder calls between March 2021 and March 2023, EPA reiterated each time that they aren't planning to support LME in the new ECMPS tool



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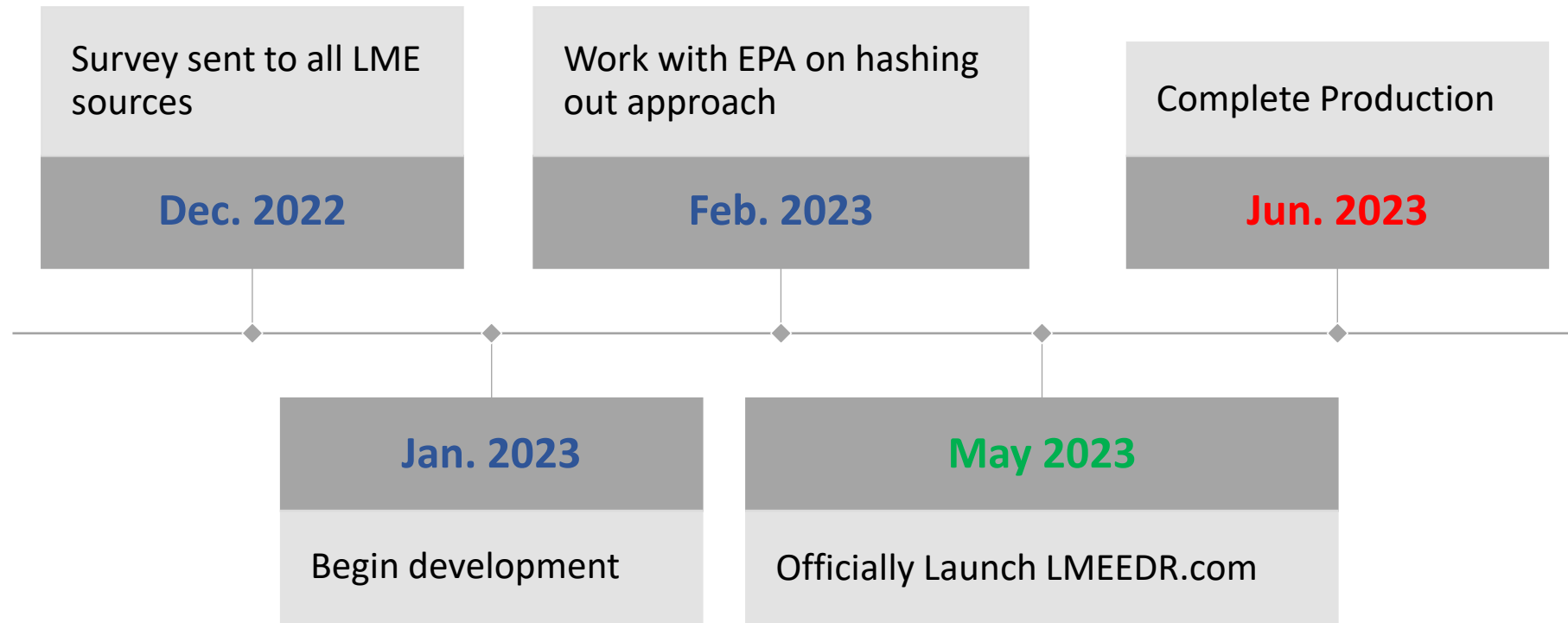
# LME EDR Options

- Install a Data Acquisition & Handling System (DAHS)
- Legacy ECMPS Client Tool + XML → JSON converter
- Home grown solution / contractor / consultant
- Stand alone web-based utility



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# Our approach



# Technical Details

- JSON Web Token (JWT) Security Model
- Microsoft suite of tools and technologies
  - .NET 6
  - Blazor
  - Azure database
  - Web API
- Web API handles all the heavy lifting
  - Database access
  - Role based security
  - Business logic / calculations
  - EDR generation
  - Integration with CAMPD API



# Functional Details

- Utility personnel can register for an account at LMEEDR.com
- Associate ORISPL(s) to user account
- Select ORISPL, Stack/Unit/Pipe and quarter to generate report
- Import CSV file (optional)
- Enter hourly operating data, operating condition and LTFF data
- Generate XML / JSON report
  
- Thanks to CAMPD API there is essentially no configuration
  - ORISPL, methods, defaults and historical EM data are all linked to the utility real-time



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## Sign In

Enter your credentials to get started.

Email

Password

Login

If you are a new user and need to setup an account, click the Register button.

Register

If you are a user and need help with your password, click the Forgot Password button.

Forgot Password





|                                     | ORIS Code | Facility Name                |
|-------------------------------------|-----------|------------------------------|
| <input checked="" type="checkbox"/> | 2082      | Fairgrounds                  |
| <input checked="" type="checkbox"/> | 2490      | Arthur Kill                  |
| <input checked="" type="checkbox"/> | 2494      | Gowanus Generating Station   |
| <input checked="" type="checkbox"/> | 3318      | Hilton Head Gas Turbine Site |
| <input checked="" type="checkbox"/> | 3338      | Aberdeen Generating Station  |
| <input checked="" type="checkbox"/> | 55276     | Ceredo Generating Station    |
| <input type="checkbox"/>            | 3         | Barry                        |
| <input type="checkbox"/>            | 5         | Chickasaw                    |
| <input type="checkbox"/>            | 7         | Gadsden                      |
| <input type="checkbox"/>            | 8         | Gorgas                       |

Save Changes



Select Facility, Stacks/Pipes or Units, and Quarter/Year:

▾
  ▾
  ▾
  ▴ ▾

1

2

3

4

**Import Hourly Operating Data (.csv)**
 Add/Edit Hourly Operating Data and LTFF Data
 Calculate and Review Emissions Data
 Success

Step 1 of 4

Next

Select one or more Hourly Operating Data files (.csv, .txt) to import. Alternatively, skip this step and add Hourly Operating Data manually.

Select files...

Accepted files: *csv, txt*

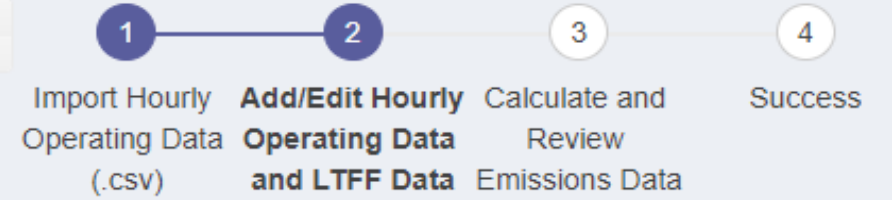
Select Facility, Stacks/Pipes or Units, and Quarter/Year:

2490 - Arthur Kill ▾

CT0001 ▾

Q2 ▾

2023 ▲ ▾



Step 2 of 4

Previous **Next**

Hourly Operating Data (CT0001)

Export to ▾

Hide Op Hours = 0?

Jump to:

April

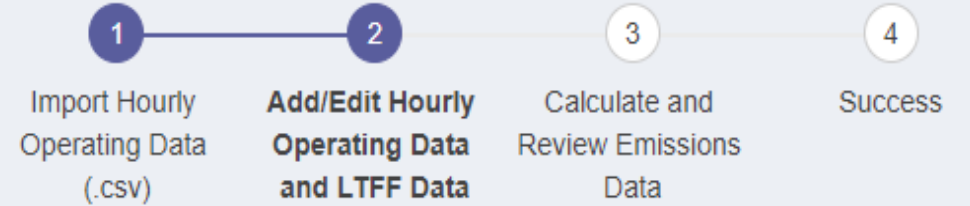
May

June

| Date/Hr       | Op. Time | Load | Load UOM | Fuel Codes | OCC |
|---------------|----------|------|----------|------------|-----|
| 04/01/2023 00 | 0        | 0    |          |            |     |
| 04/01/2023 01 | 0.2      | 5    | MW       | PNG        | B   |
| 04/01/2023 02 | 1        | 23   | MW       | PNG        | B ▾ |
| 04/01/2023 03 | 1        | 24   | MW       | PNG        | B   |
| 04/01/2023 04 | 1        | 23   | MW       | PNG        | B   |
| 04/01/2023 05 | 0.5      | 0    | MW       | PNG        | B   |
| 04/01/2023 06 | 0        | 0    |          |            |     |
| 04/01/2023 07 | 0        | 0    |          |            |     |

Select Facility, Stacks/Pipes or Units, and Quarter/Year:

6463 - Dayton Avenue Sul ▾ GT2 ▾ Q2 ▾ 2023 ▲ ▾



Step 2 of 4

Previous **Next**

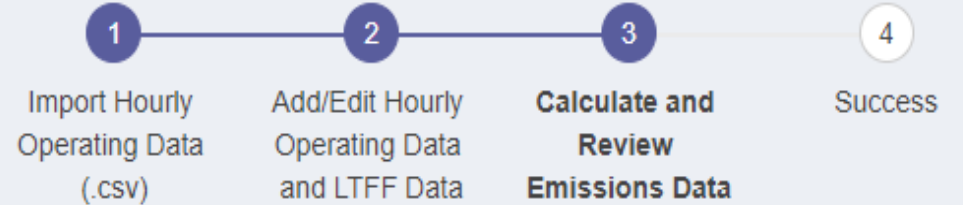
Hourly Operating Data (GT2) **Long Term Fuel Flow Data (GT2)**

**+ Add Long Term Fuel Flow Data** **Export to Excel**

| System ID | Fuel Flow Period | Fuel FI... | Fuel Flow UOM | GCV | GCV UOM                 |        |
|-----------|------------------|------------|---------------|-----|-------------------------|--------|
| 001 - DSL |                  | 888888     | GAL - Gallons | 0   | BTUGAL - Btu per Gallon | Delete |

Select Facility, Stacks/Pipes or Units, and Quarter/Year:

6463 - Dayton Avenue Sul ▾ GT2 ▾ Q2 ▾ 2023 ▾



Step 3 of 4

Previous **Generate Emissions EDR(s) ▾**

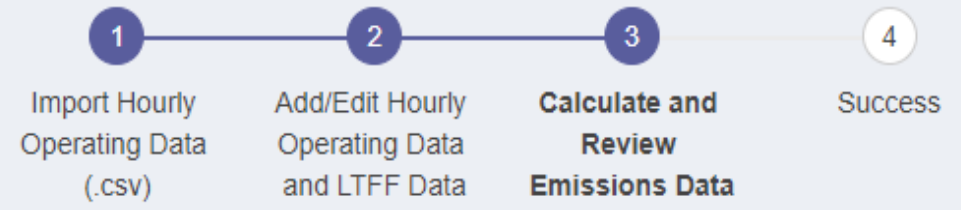
LME (GT2) Long Term Fuel Flow Results (GT2)

Export to Excel Hide Op Hours = 0?  Jump to: April May June

| Date/Hr       | Op. Time | L... | L... U... | Heat Input Total (mmBtu) | Fuel T... | SO2 Mass (lb) |         |        | NOx Mass (lb) |         |         | CO2 M... |       |
|---------------|----------|------|-----------|--------------------------|-----------|---------------|---------|--------|---------------|---------|---------|----------|-------|
|               |          |      |           |                          |           | OCC           | Default | Value  | OCC           | Default | Value   | OCC      | Defau |
| 06/01/2023 04 | 0.25     | 5    | MW        | 4735.3                   | DSL       | A             | 0.0505  | 239.1  | U             | 1.2     | 5682.4  | A        | 0.081 |
| 06/01/2023 05 | 1.0      | 15   | MW        | 56823.7                  | DSL       | A             | 0.0505  | 2869.6 | C             | 0.133   | 7557.6  | A        | 0.081 |
| 06/01/2023 06 | 1.0      | 13   | MW        | 49247.2                  | DSL       | A             | 0.0505  | 2487.0 | C             | 0.133   | 6549.9  | A        | 0.081 |
| 06/01/2023 07 | 0.6      | 6    | MW        | 13637.7                  | DSL       | A             | 0.0505  | 688.7  | U             | 1.2     | 16365.2 | A        | 0.081 |

Select Facility, Stacks/Pipes or Units, and Quarter/Year:

6463 - Dayton Avenue Sul ▾ GT2 ▾ Q2 ▾ 2023 ▾



Step 3 of 4

Previous **Generate Emissions EDR(s)** ▾

- XML
- JSON
- Both

LME (GT2) Long Term Fuel Flow Results (GT2)

Export to Excel Hide Op Hours = 0?  Jump to: April May June

| Date/Hr       | Op. Time | L... | L... U... | Heat Input Total (mmBtu) | Fuel T... | SO2 Mass (lb) |         |        | NOx Mass (lb) |         |         | CO2 Ma |       |
|---------------|----------|------|-----------|--------------------------|-----------|---------------|---------|--------|---------------|---------|---------|--------|-------|
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# Conclusions & Lessons Learned

- **Challenges**

- APIs in beta form aren't fun. Reliability can be a concern until complete
- FACT and CAMPD not intended for compliance
- Facilities MP default data not the most accurate and consistent

- **Work left to be done**

- Change APIs to production endpoints once available
- Retrieve new data once they get included in production API
- File management system
- Custom CSV file imports
- API integration into both EPA check specs and CDX

- **Overall, a worthwhile investment**



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# Questions?



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