Contractor Experience with Environmental Product Declarations (EPD's)

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What is an EPD?

- **Quantified** environmental information on the **life cycle** of a product to enable **comparisons** between products fulfilling the same **function.***
  - **AKA:** A Nutrition Label for each producers mix design that calculates environmental impacts for comparisons/evaluations.
  - Specific EPD for each Plant & Material Type.

Source: ISO 14025:2006

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Why are EPD's important?

1. Industry has a responsibility to limit its impact to the environment.

2. Impending Policies & Regulations
   a) Agencies are actively working to create future guidelines/etc.
      i. **Industry NEEDS to be an active participant in this phase:**
         i. **Standard vs. Average**
         ii. **Considerations for regional differences (source of materials/etc.)**
         iii. **Data gaps that current exist / concern for potential EPD ceiling limits**

3. Operational Cost Savings

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What inputs are considered in an EPD?

(For Contractor)

- **Currently, ONLY Cradle-to-Gate**
  - **Materials (A1)**
    - (Binders/Additives/Aggregates)
  - **Transport (A2)**
    - (From Supplier to Plant)
  - **Production (A3)**
    - (Plant Fuel/Electricity/Water/Offsite Disposal Waste)

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What is NOT included in an EPD (Gate to Grave)?

(For Contractor)

Contractor "Controlled"

- Mix Transport to Project
  - Haul Miles & Fuel Usage
- Construction Installation
  - Equipment/Production Rates

Owner "Controlled"

- Use Stage
  - Maintenance/Repair/Rehab
- End-of-Life Stage
  - Demolition/Waste Disposal

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Data Needed to Create EPD

- **Materials (A1)+ Transport (A2)**

- **Aggregates / Virgin Binder / Binder & Mix Additives (Per Type)**
  - % mass of total mix to include weight of AC (different than % shown on TL-127)
  - Source (Supplier) + Haul Distance to Plant

- **RAP**
  - % mass of total mix to include weight of AC (different than % shown on TL-127)
  - Haul Distance to Plant (If initial processing/storage = onsite, then distance = 0)

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Data Needed to Create EPD

Production (A3)

1st Step: Choose a 12-month period within past 5 years to use for this data.

- **Total Asphalt Mix Sold**
  - Produced & Placed at job
- **Total Water Consumed**
  - Dust control, WMA Foaming, Irrigation (Landscaping), Slurry for wet scrubber/baghouse fines/hydrated lime or other mineral fillers
- **Total Electricity**
- **Total Fuel per Category**
  - Onsite Generator / Burner / Oil Heater / Equipment
    - RAP Processing is burden free so can exclude this portion of fuel usage
- **Total Disposed Waste (ONLY THAT'S TRANSPORTED OFFISTE)**
  - Hazardous / Non-Hazardous / Recycled

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SPC Lessons Learned

Data Collection Emphasis (Plant Production)

- **Can use any 12-month period in last 5-years.**
  - Beneficial **IF** you have ability to collect older data.
  - Create data log for each data type.

- **Process to collect accurate & desired data only.**
  - Sub meters
    - Electricity
    - Water
  - Fuel usage
  - Inventory

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SPC Lessons Learned

Major Impacts to EPD

- **% of RAP**
- **Virgin Binder %**
- **Mix Production Temps**
  - WMA vs HMA
- **Burner Fuels**
  - Nat Gas (best)
  - Diesel (worst)
- **Transport**
  - Distance
  - Type (Truck / Train / Barge)

SPC Lessons Learned

Current Data Gaps (not considered in EPD)

- **Upstream/Raw Materials Impact**
  - Values for Aggregates/Binders/Fuels/Electricity are assumed across the board using an estimated industry average.
    - Quarry A vs. B may have differing values that could impact Asphalt EPD

- **No consideration for Plant Proximity to Project**
  - Plant “A” = located 2 miles from project has high EPD.
  - Plant “B” = located 50 miles from project = low EPD.
    - Plant “B” would be “preferred” based on Cradle-to-Gate

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PUBLISHED EPD / GWP VALUE

TABLE 4. LIFE CYCLE IMPACT INDICATORS

ACRONYM	INDICATOR	UNIT	QUANTITY PER METRIC TONNE ASPHALT MIXTURE (PER SHORT TON ASPHALT MIXTURE)			
			MATERIALS (A1)	TRANSPORT (A2)	PRODUCTION (A3)	TOTAL (A1-A3)
GWP-100	*Global warming potential, incl. biogenic CO2*	*kg CO2 Equiv.*	*22.40 (20.32)* +	*3.31 (3.00)* +	*24.97 (22.65)* =	*50.68 (45.98)*
ODP	*Ozone depletion potential*	*kg CFC-11 Equiv.*	*1.40e-08 (1.27e-08)*	*2.00e-08 (1.81e-08)*	*6.64e-08 (6.02e-08)*	*1.00e-07 (9.11e-08)*
EP	*Eutrophication potential*	*kg N Equiv.*	*6.04e-03 (5.48e-03)*	*9.87e-04 (8.95e-04)*	*1.99e-03 (1.80e-03)*	*9.02e-03 (8.18e-03)*
AP	*Acidification potential*	*kg SO2 Equiv.*	*6.61e-02 (6.00e-02)*	*1.69e-02 (1.53e-02)*	*8.16e-02 (7.40e-02)*	*1.65e-01 (1.49e-01)*
POCP	*Photochemical ozone creation potential*	*kg O3 Equiv.*	*1.40 (1.27)*	*0.54 (0.49)*	*1.03 (0.93)*	*2.97 (2.69)*

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ACKNOWLEDGMENT

Joseph Shacat

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THANK YOU

NAPA Info:

- Info: AsphaltPavement.org/EPD
- Access Tool: AsphaltEPD.org

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