Air Permit Basics
Western Washington Wood Energy and Forest Biomass Workshop

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Regulated Air Pollutants

- **Pollutants of Concern**
  - **Criteria Pollutants (CAPs)**
    - Nitrogen Oxides (NO\textsubscript{x}), Carbon Monoxide (CO), Lead, Sulfur Dioxide (SO\textsubscript{2}), Ozone precursors – NO\textsubscript{x} and Volatile Organic Compounds (VOC), Particulate Matter (PM\textsubscript{10} and PM\textsubscript{2.5})
  - **Hazardous Air Pollutants (HAPs)**
    - 187 Federally-listed chemicals and chemical classes (e.g., acetaldehyde, formaldehyde, benzene, dioxins/furans, polycyclic aromatic hydrocarbons)
  - **Toxic Air Pollutants (TAPs)**
    - Hundreds of chemicals and chemical classes (includes HAPs), SWCAA and WA similar
  - **Carbon Dioxide (CO\textsubscript{2}) and Greenhouse Gases**
Air Quality Standards

- **National Ambient Air Quality Standards (NAAQS)**
  - 100 ppb NO₂ (1-hr)
  - 35 µg/m³ PM₂.₅ (24-hr) and 12.0 µg/m³ PM₂.₅ (3-yr annual avg)

- **Federal Emission Standards**
  - 40 CFR 60 Subpart Dc
    - ≥ 10 MMBtu/hr, natural gas or ≥ 30 MMBtu/hr, wood
  - 40 CFR 63 Subparts DDDDD and JJJJJJ (major vs non-major)
    - < 10 MMBtu/hr: reporting and periodic tune-up
    - ≥ 10 MMBtu/hr: emission standards, testing, and reporting

- **TAP Requirements**
  - SWCAA jurisdiction: WAC 173-460 (1998 version)
  - Other Air Agencies: WAC 173-460 (2009 version)
Air Permit Types

- Permits issued on Potential-to-Emit (PTE) basis
- May have multiple permits
  - SWCAA
    - Air Discharge Permit (ADP)
      - ≥ 1 ton/yr, sum of CAPs or TAPs; other air agencies may have different thresholds
    - Title V Air Operating Permit (AOP)
      - ≥ 100 ton/yr any CAP
      - ≥ 25 ton/yr sum of HAPs or ≥ 10 ton/yr any single HAP
  - WA State Department of Ecology
    - Prevention of Significant Deterioration (PSD) Permit
      - ≥ 250 ton/yr any CAP; CO$_2$ also considered if ≥ 10,000 ton/yr
      - Implemented and enforced by SWCAA
Components of an ADP application (generally)

- Process flow diagrams and facility layout
- Specific info about each emission unit (e.g., make, model, capacity)
- Emission calculations for each emission unit, including assumptions, emission factors, or formulas (show your work!)
- Demonstration that emission controls meet the definition of Best Available Control Technology (BACT), i.e., Top-down BACT
- Applicability review of federal, state, and local regulations
- Demonstration that no NAAQS or State air quality standards will be exceeded; may require air quality modeling
- Monitoring/testing to demonstrate compliance with air permit
ADP Timeline

• Process for obtaining an ADP
  ○ Pre-application conference (recommended)
  ○ State Environmental Policy Act (SEPA) or Environmental Impact Statement (EIS)
  ○ Submit ADP application – SWCAA determines if complete
  ○ Public review
    ▫ 30 day public comment period (likely)
    ▫ Public meeting/hearing (less likely, but possible)
  ○ Final ADP appealable for 30 days to Pollution Control Hearings Board
  ○ Plan on a minimum of 90 days – *highly dependent* on completeness of application

• The ADP is a *pre-construction* and operating permit
Permitting a Biomass-fired Boiler

- Considerations During the Application Process
  - Involve the public early on in the project
  - Avoid incomplete application and inadequate budgeting of time
  - NAAQS compliance – short-term NO\(_2\) and PM may be a challenge
  - TAPs/HAPs likely will need to be modeled
  - Project should include air pollution control equipment, (e.g., baghouse [minimum], Electrostatic Precipitator [ESP])
  - Impacts to sensitive groups (e.g., children, sick, elderly, athletes)
  - Impacts due to increased vehicle traffic (diesel exhaust PM)
  - Storage of biomass, dust, compostable material, water runoff
  - Any additional equipment that needs to be permitted (e.g., engines, dryers, grinders)
Permitting a Biomass-fired Boiler

**Project Considerations and Questions**

- Do you need a specific or variable turndown ratio?
- What are your alternate or startup fuels?
- Will you use O\textsubscript{2} trim or other combustion control devices?
- How often is soot blowing or grate cleaning needed?
- What type of ash handling system are you using?
- What is your demand during summer months?
- Will you be generating power?
- Is your control equipment operable during startup/shutdown?
- Will you have any pre-processing of fuels on site (e.g. dryers, grinders, pelletizers) that may require additional permitting?
- Any emergency engines or other fuel burning equipment?
QUESTIONS?

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Permitting Help and Resources

- **SWCAA resources**
  - Call, write, e-mail, or web
    - Website includes forms, rules, regulations, pollutant lists, staff contacts and expertise list

- **Washington State resources**
  - WA Department of Ecology, (360) 407-6000
  - Office of Regulatory Assistance (http://www.oria.wa.gov/)

- **Environmental Protection Agency resources**
  - New Source Review manual (www.epa.gov/ttn/nsr/gen/wkshpman.pdf)
  - Technology Transfer Network (www.epa.gov/ttn)
  - Applicability Determination Index (http://cfpub.epa.gov/adi)