Washington's Greenhouse Gas Reporting Rule
WAC 173-441
October 2009 Workshops

Greenhouse Gas Units

- **Carbon dioxide equivalent (CO_2e):**
  - A common unit for comparing emissions of different greenhouse gases (apples to apples)
  - Uses global warming potential (GWP) to convert
- **Global warming potential (GWP):**
  - How much a gas warms the atmosphere
  - The ratio of the heat trapping ability of each greenhouse gas relative to that of carbon dioxide
- Example:
  - 1 MT of CH_4 x 21 GWP = 21 MT CO_2e

DEPARTMENT OF ECOLOGY
State of Washington

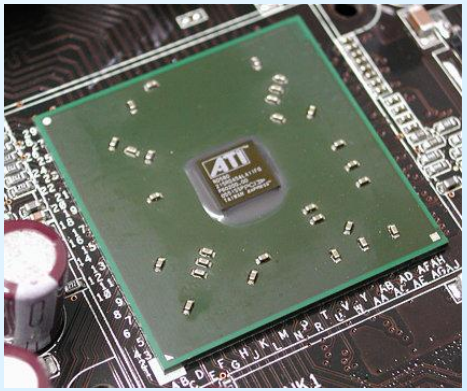
Greenhouse Gases

Carbon Dioxide (CO_2)
GWP = 1

Methane (CH_4)
GWP = 21

Nitrous Oxide (N_2O)
GWP = 310

Hydrofluorocarbons (HFC's)
GWP = 12 – 11,700



Perfluorocarbons (PFC's)
GWP = 6,500 – 9,200

Sulfur Hexafluoride (SF_6)
GWP = 23,900

Direct vs. Indirect Emissions

Direct emissions (Scope 1):

- Combustion of fuels:
  - Boilers
  - Fleet tailpipe emissions
  - Carbon dioxide, methane, nitrous oxide
- Process emissions:
  - Lime
  - Cement
- Fugitive emissions:
  - Refrigerant leaks from air conditioning or refrigeration units

Only direct emissions count towards triggering the threshold

Indirect emissions (Scope 2):

- Associated with the purchase of electricity, heating, cooling, or steam

Reporting Thresholds

- Source or combination of sources
  = 10,000 MT CO_2e (25,000 MT CO_2e in 2009)
  - Stationary sites
  - Marine vessels
  - Rail equipment
  - Aircraft (instate flights only starting in 2012)

- Fleets of on-road motor vehicles = 2,500 MT CO_2e

Fuel Use to Trigger Sites and Nonroad Mobile Sources Threshold

Fuel Type	Approximate Fuel to Meet Threshold 10,000 MT CO2e (2010+)	Approximate Fuel to Meet Threshold 25,000 MT CO2e (2009)	Units / yr
Natural Gas	180,000,000	457,000,000	Cubic feet
Bituminous Coal	4,400	11,100	Tons
Wood	5,700	14,400	Tons
Residual oil (#6)	846,000	2,100,000	Gallons
Diesel	980,000	2,460,000	Gallons
Gasoline	1,120,000	2,800,000	Gallons
Jet fuel	1,000,000	2,500,000	Gallons

Fuel Use to Trigger 2,500 MT On-Road Threshold

Fuel Type	Estimated Fuel to Meet Threshold (gal/yr)
Gasoline	280,000
Diesel	240,000

Reportable Mobile Sources

- Transports people or cargo under its own power, or
- An auxiliary unit of something that moves under its own power
  - Capable of emitting greenhouse gases while in transit
  - Permanently attached equipment fueled from a common tank

yes → Mobile source

no → Stationary source

- Includes portable sources such as towed generators that only operate when stationary

Reportable Mobile Sources

Mobile source that moves in the air?

yes

Operates exclusively within boundaries of a single site?

no

Fleet of aircraft – reportable

yes

Part of that site – reportable

no

Next slide

Reportable Mobile Sources

Mobile source that moves in the water?

yes

Operates exclusively within boundaries of a single site?

no

Fleet of marine vessels – reportable

yes

Part of that site – reportable

no

Next slide

Reportable Mobile Sources

Mobile source that moves on land by rail?

yes

Fleet of rail equipment – reportable

no

Next slide

Reportable Mobile Sources

Mobile source that moves on land by road?

yes

Operates exclusively within boundaries of a single site?

no

Do not report

- Off-road equipment
- Forklifts

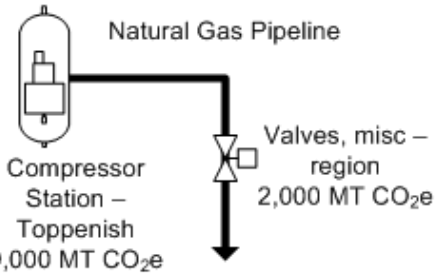
no

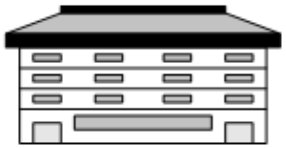
Fleet of on-road motor vehicles – reportable

yes

Part of that site – reportable

Company X – Organization

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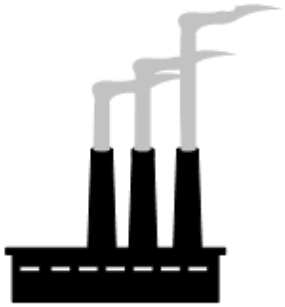
200 MT CO_2e

Small Office – Moses Lake
1 MT CO_2e

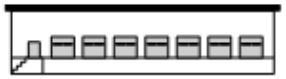
Fruit Juice Concentrator – Toppenish
24,700 MT CO_2e


Power Plant – Tacoma
565,933 MT CO_2e
(358,173 MT CO_2e from biomass)

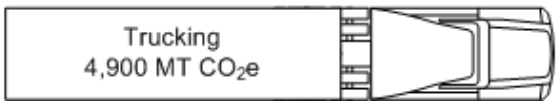
Cabinet Shop – Richland
59,678 MT CO_2e
(53,448 MT CO_2e from biomass)

Lumber Mill – Bellingham
9,270 MT CO_2e
(9,083 MT CO_2e from biomass)

Forklifts
200 MT CO_2e


Warehouse – Vancouver
250 MT CO_2e

Passenger Cars
1,188 MT CO_2e



Rail Equipment
12,000 MT CO_2e

Marine Vessels
23,822 MT CO_2e

Aircraft
3,000 MT CO_2e

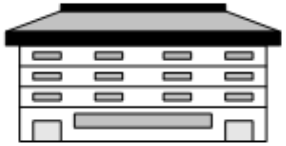
Company X – Reporting Groups (2010 – 2011)

Natural Gas Pipeline

Compressor Station – Toppenish
9,000 MT CO_2e

Valves, misc – region
2,000 MT CO_2e

Stationary sources report as individual sites



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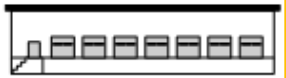

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Mobile sources report as statewide fleets

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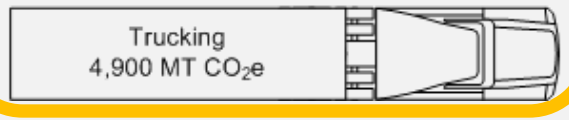


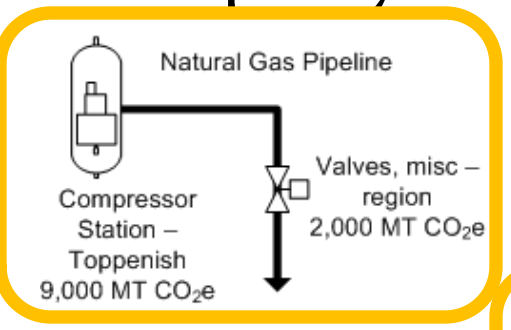
Trucking
4,900 MT CO_2e

Rail Equipment
12,000 MT CO_2e

Marine Vessels
23,822 MT CO_2e

Aircraft
3,000 MT CO_2e

Company X – Applying Threshold (2010 – 2011)



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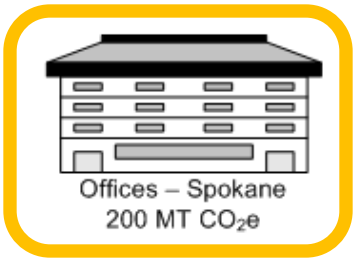
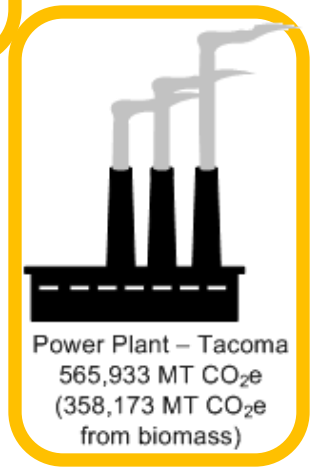
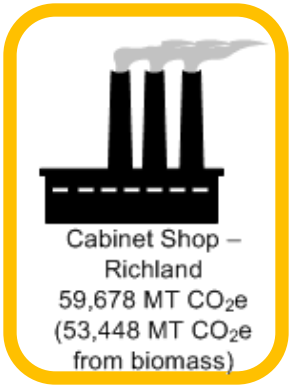
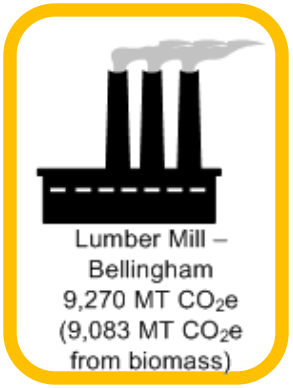
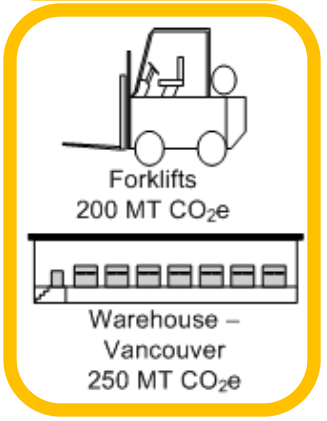


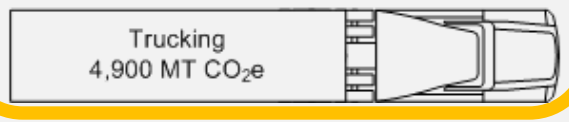








≥ 2,500 MT CO_2e



Only direct emissions count towards thresholds

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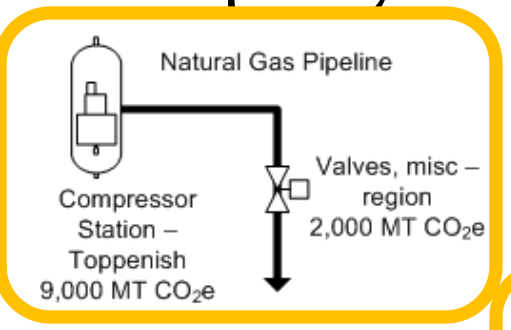

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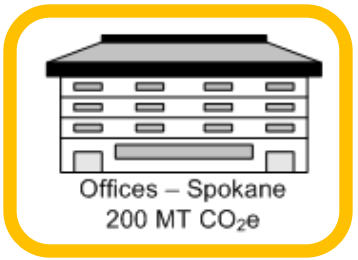

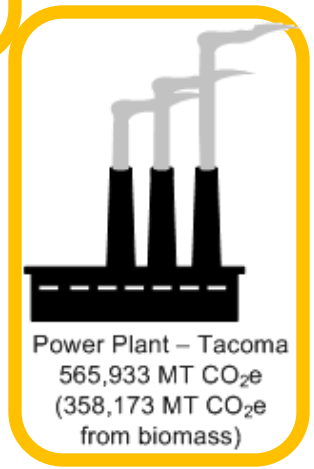

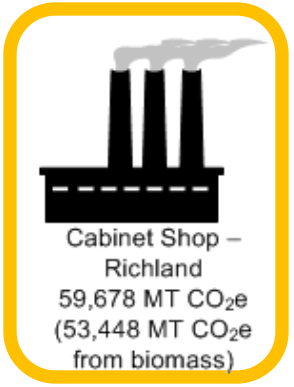

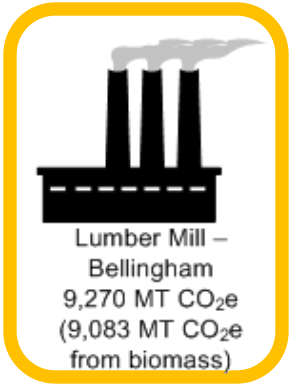

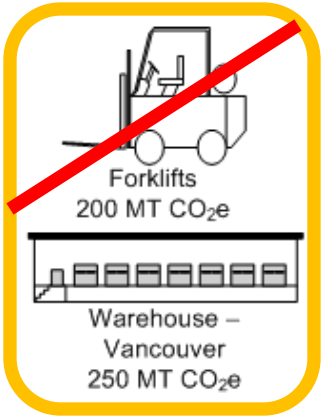

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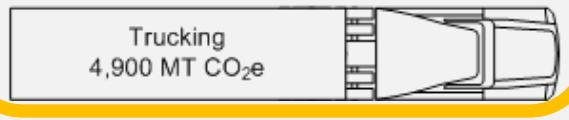

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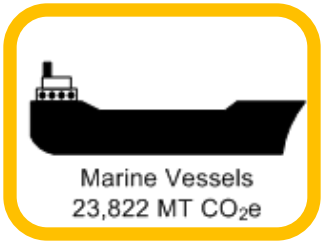

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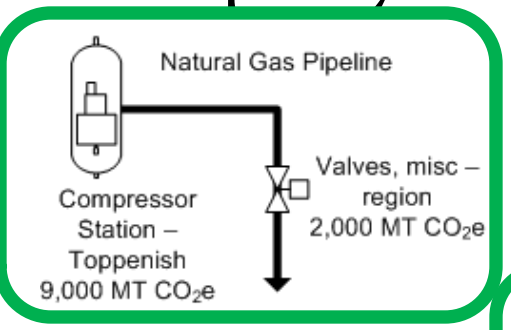

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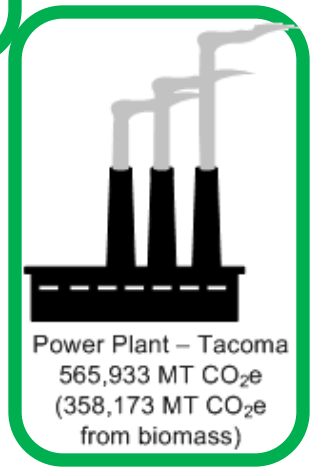

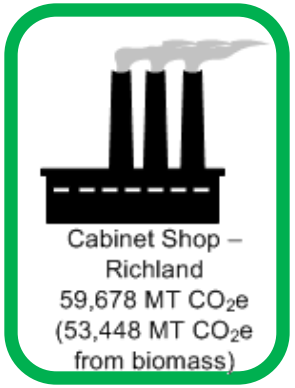

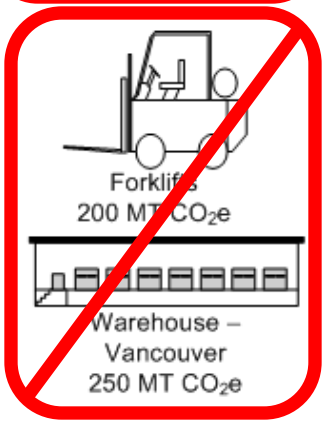

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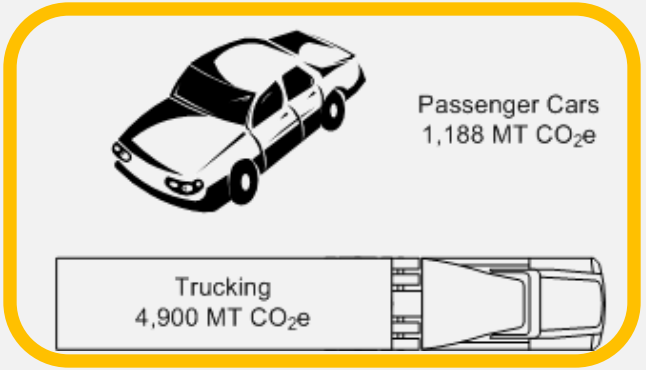

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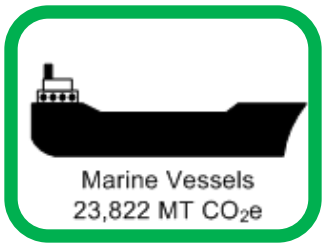

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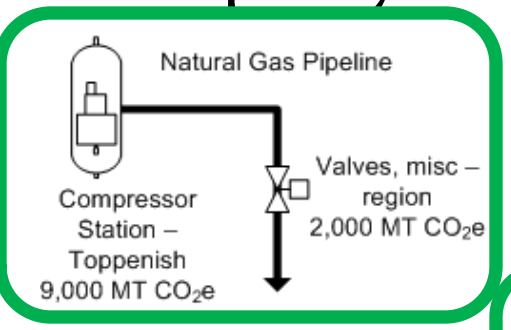

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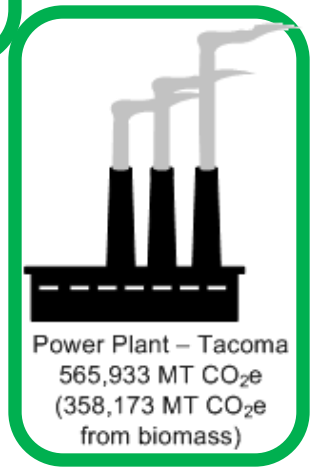

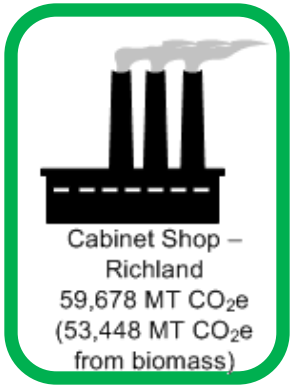

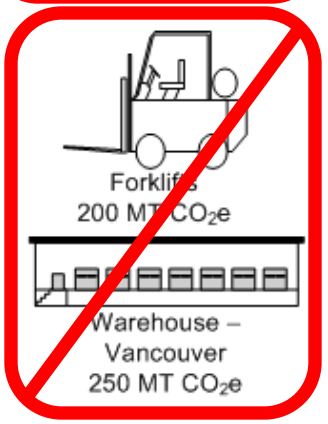

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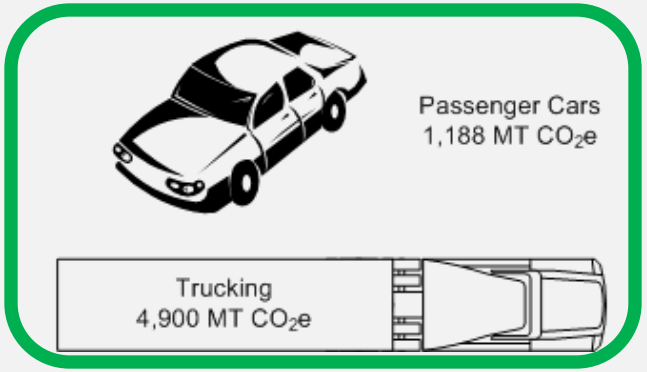

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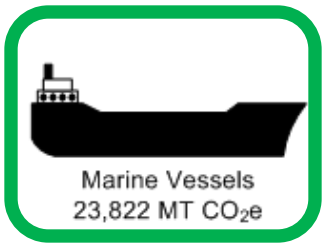
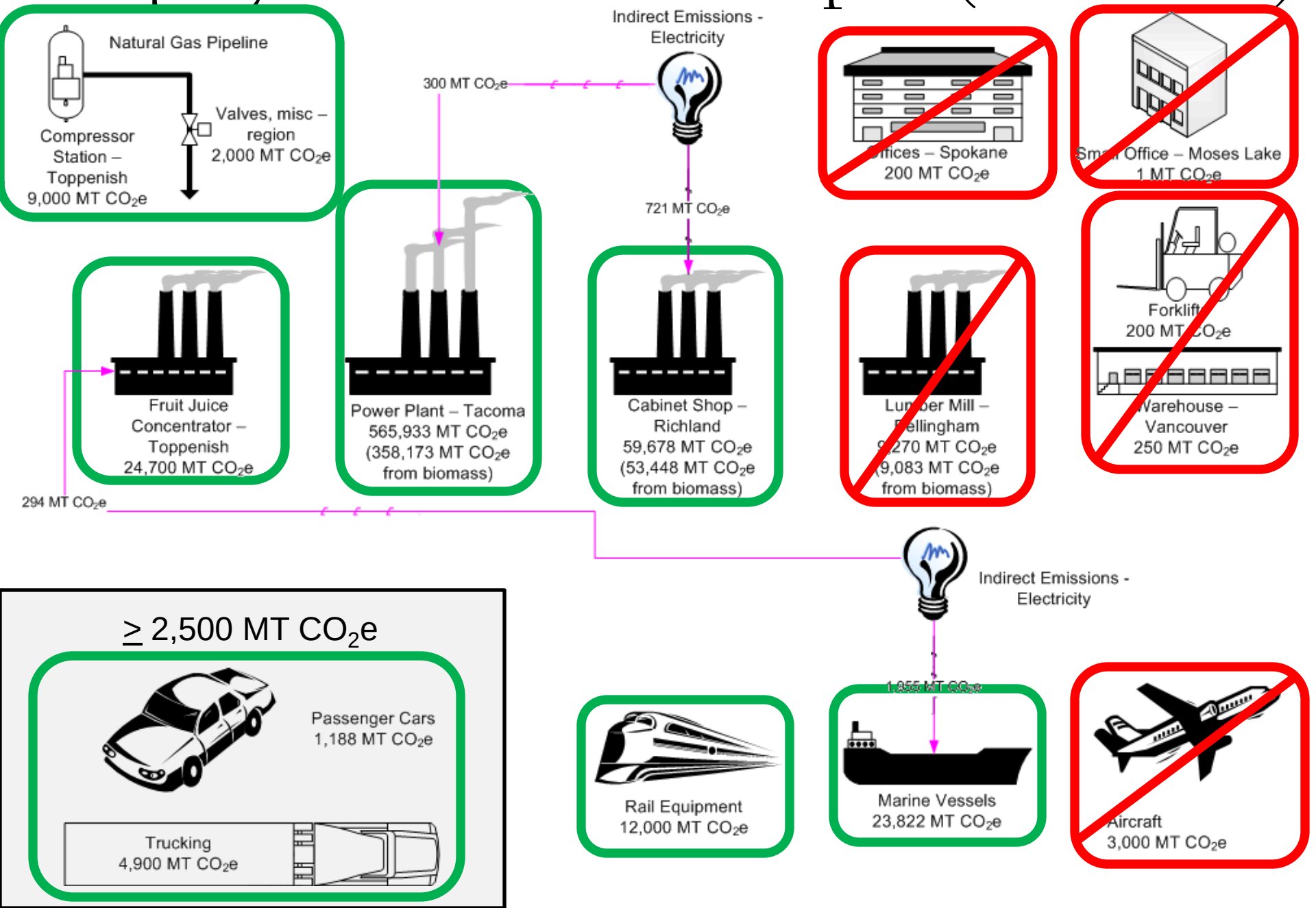
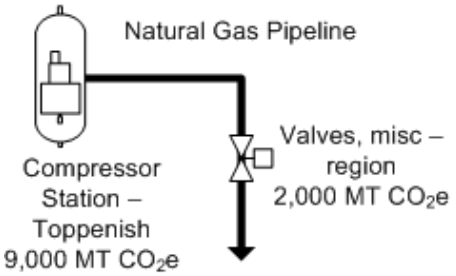


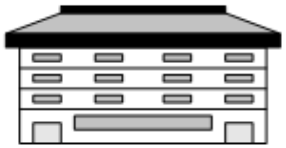
Company X – Emissions to Report (2010 – 2011)



Company X – Reporting Groups (2012+)



Do not report:
- sites < 5 MT CO_2e
- off-road mobile sources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Forklifts
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Warehouse – Vancouver
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Fruit Juice Concentrator – Toppenish
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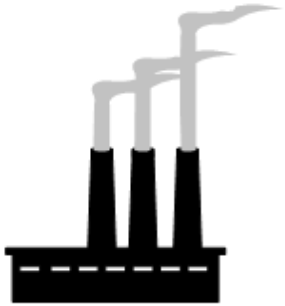
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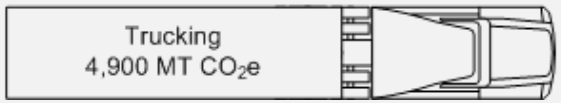
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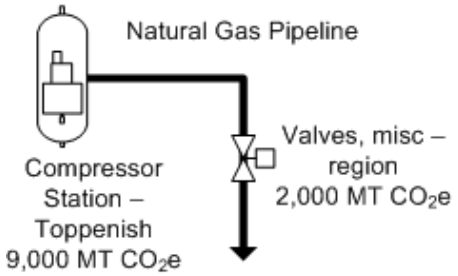
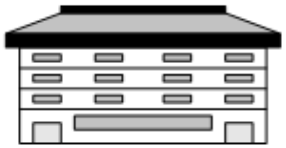


Combine direct emissions from all stationary and non-road mobile sources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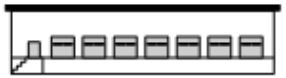
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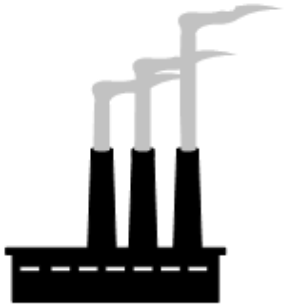
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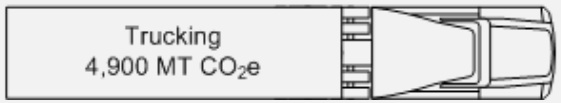
(9,083 MT CO_2e from biomass)

Passenger Cars
1,188 MT CO_2e

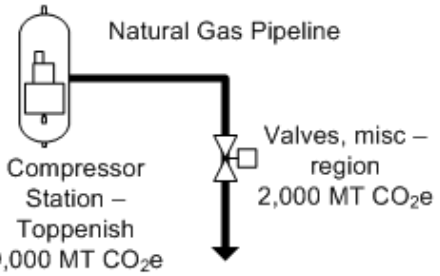

Trucking
4,900 MT CO_2e

Rail Equipment
12,000 MT CO_2e

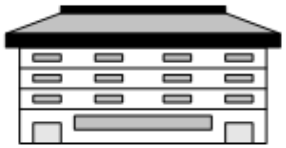
Marine Vessels
23,822 MT CO_2e

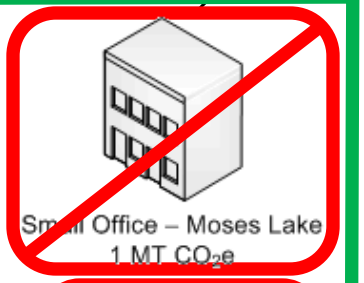
Aircraft
3,000 MT CO_2e

Company X – Applying Threshold (2012+)



≥ 10,000 MT CO_2e

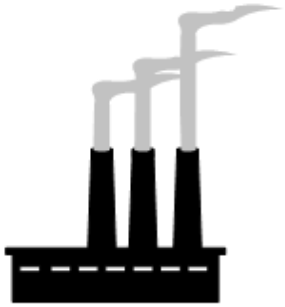

Offices – Spokane
200 MT CO_2e


Small Office – Moses Lake
1 MT CO_2e

Forklifts
200 MT CO_2e

Warehouse – Vancouver
250 MT CO_2e

Fruit Juice Concentrator – Toppenish
24,700 MT CO_2e

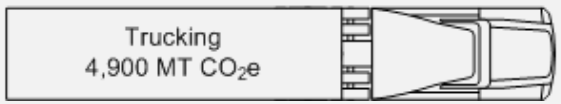

Power Plant – Tacoma
565,933 MT CO_2e
(358,173 MT CO_2e from biomass)

Cabinet Shop – Richland
59,678 MT CO_2e
(53,448 MT CO_2e from biomass)

Lumber Mill – Bellingham
9,270 MT CO_2e
(9,083 MT CO_2e from biomass)

Only direct emissions count towards thresholds

Passenger Cars
1,188 MT CO_2e

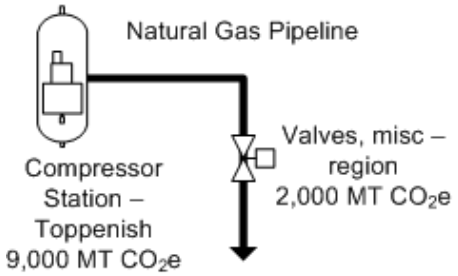

Trucking
4,900 MT CO_2e

Rail Equipment
12,000 MT CO_2e

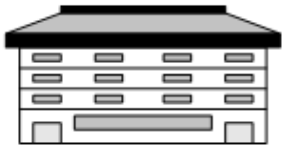
Marine Vessels
23,822 MT CO_2e

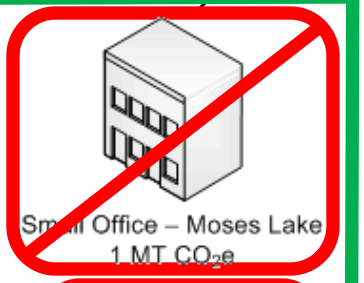
Aircraft
3,000 MT CO_2e

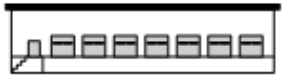
Company X – Applying Threshold (2012+)

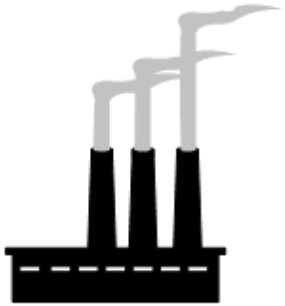


≥ 10,000 MT CO_2e

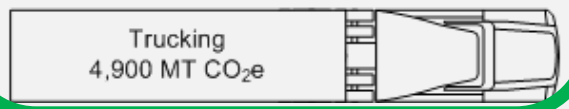






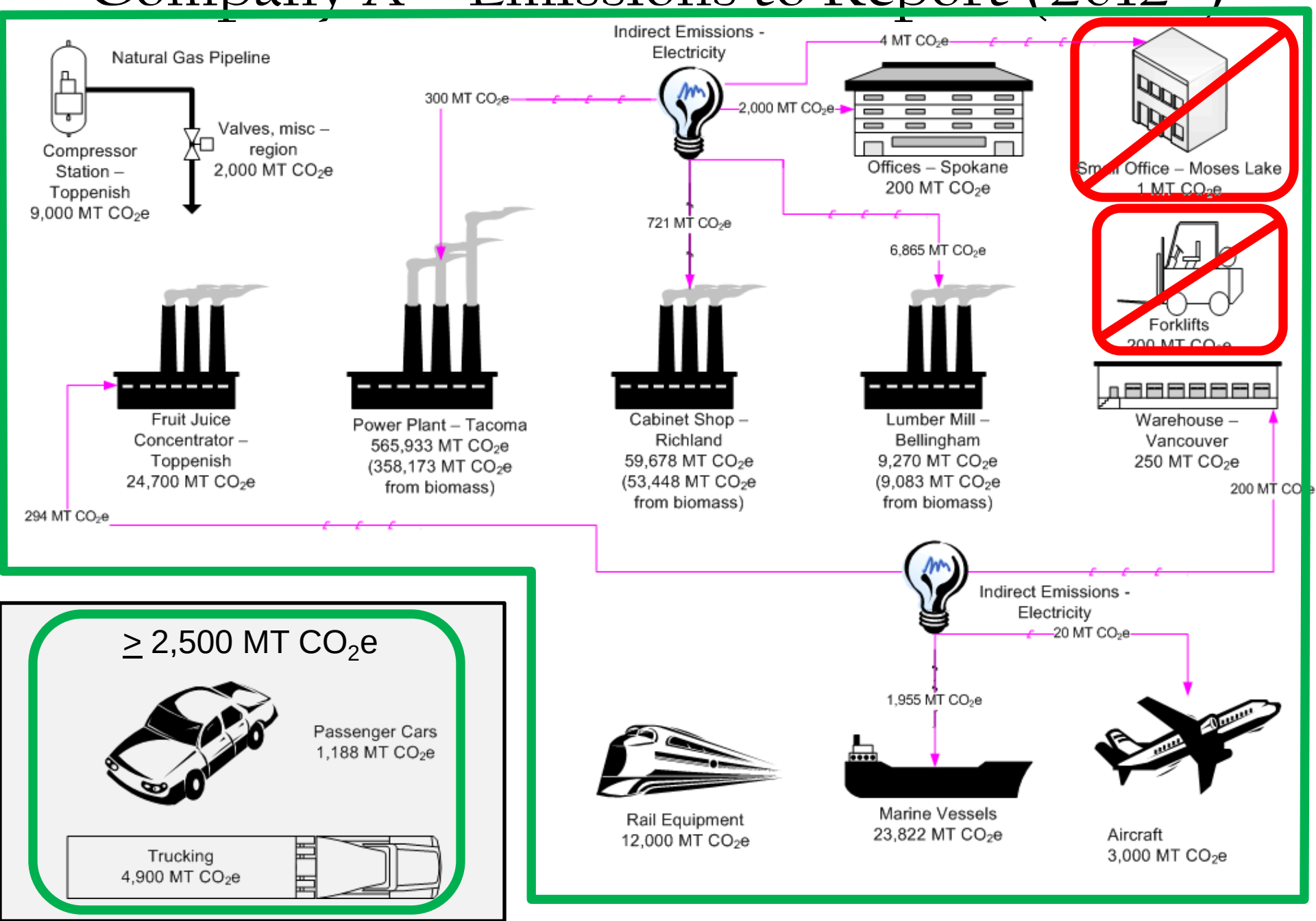


≥ 2,500 MT CO_2e

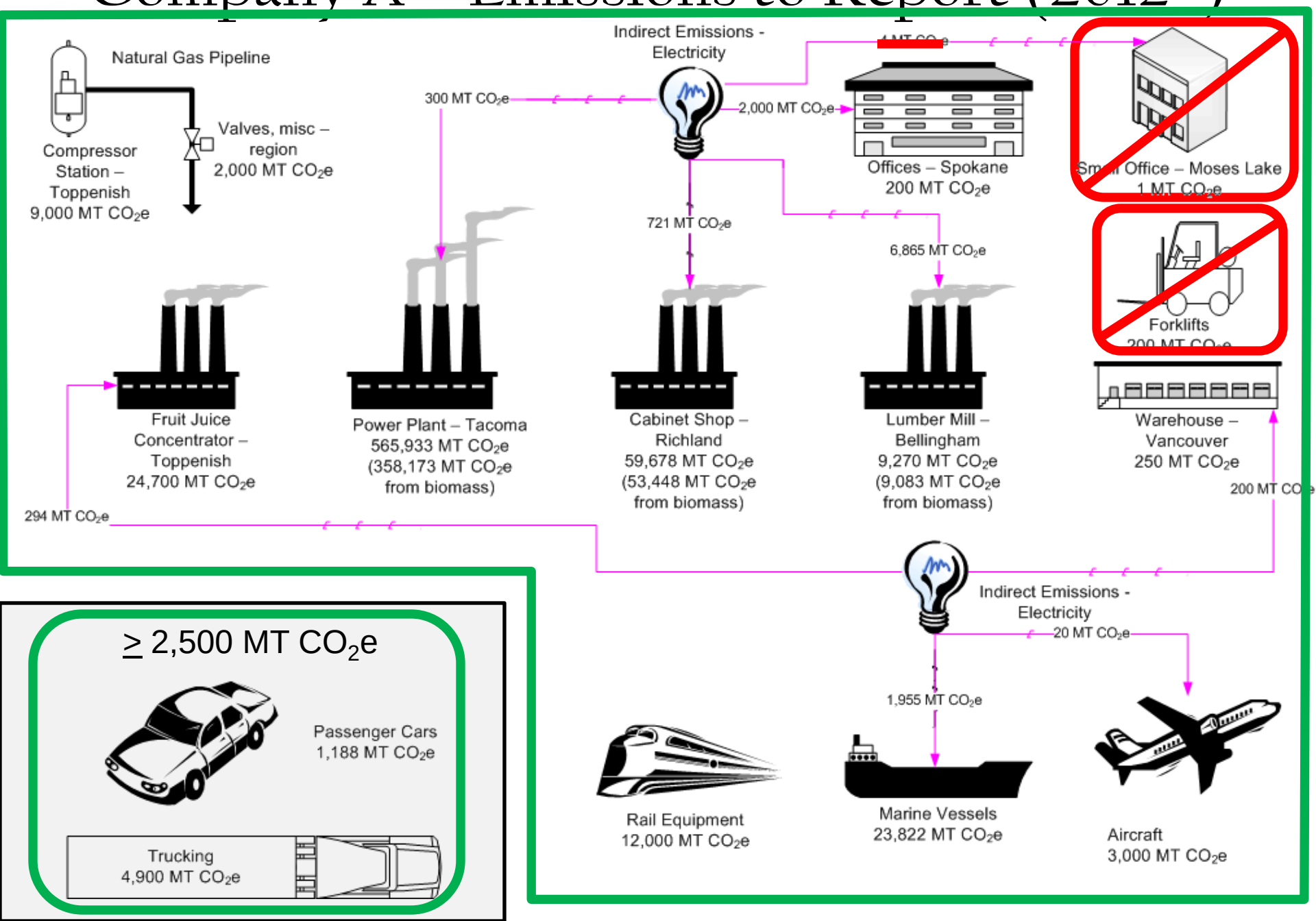


Only direct emissions count towards thresholds

Company X – Emissions to Report (2012+)



Company X – Emissions to Report (2012+)



Questions?