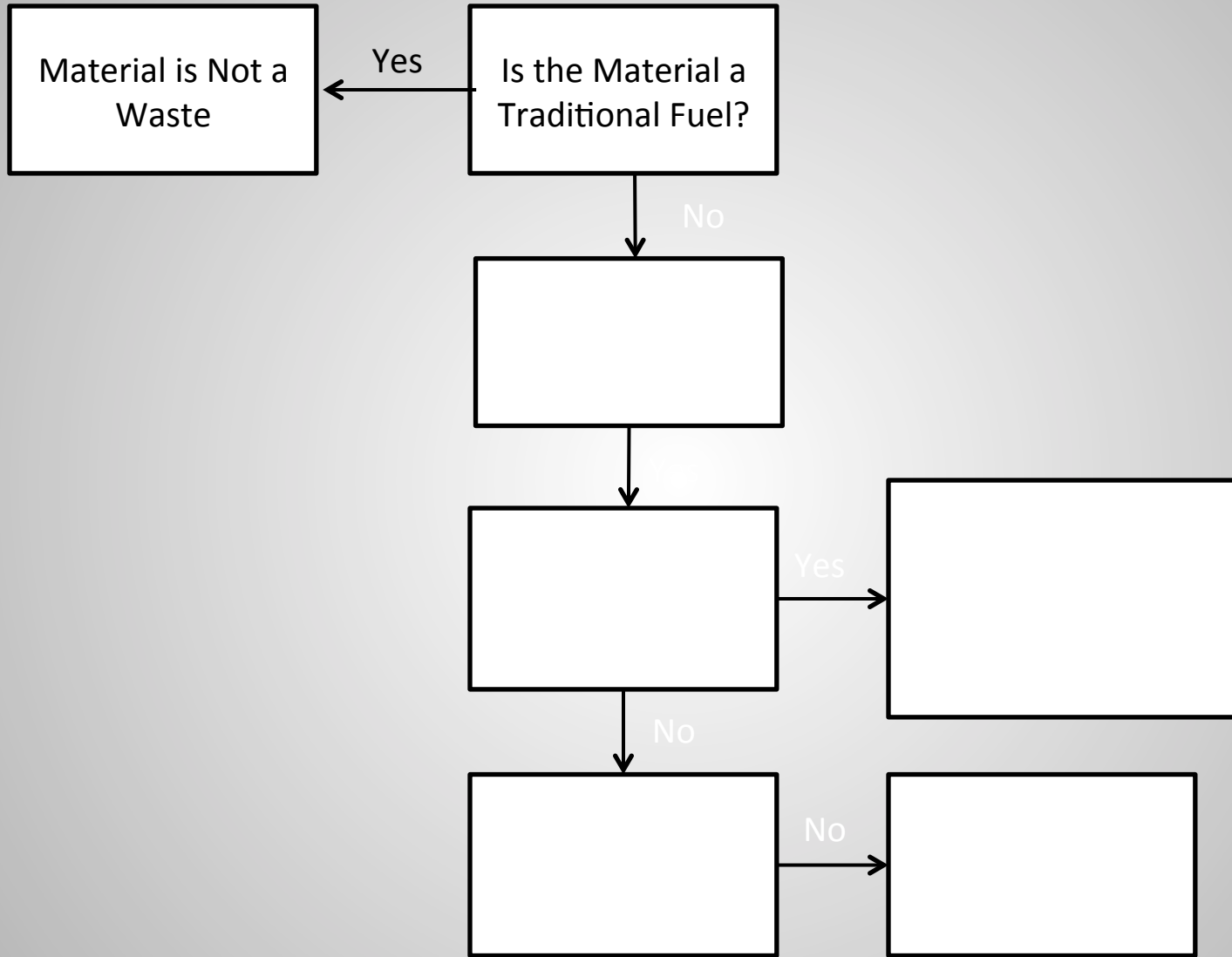


# The NHSM Rule

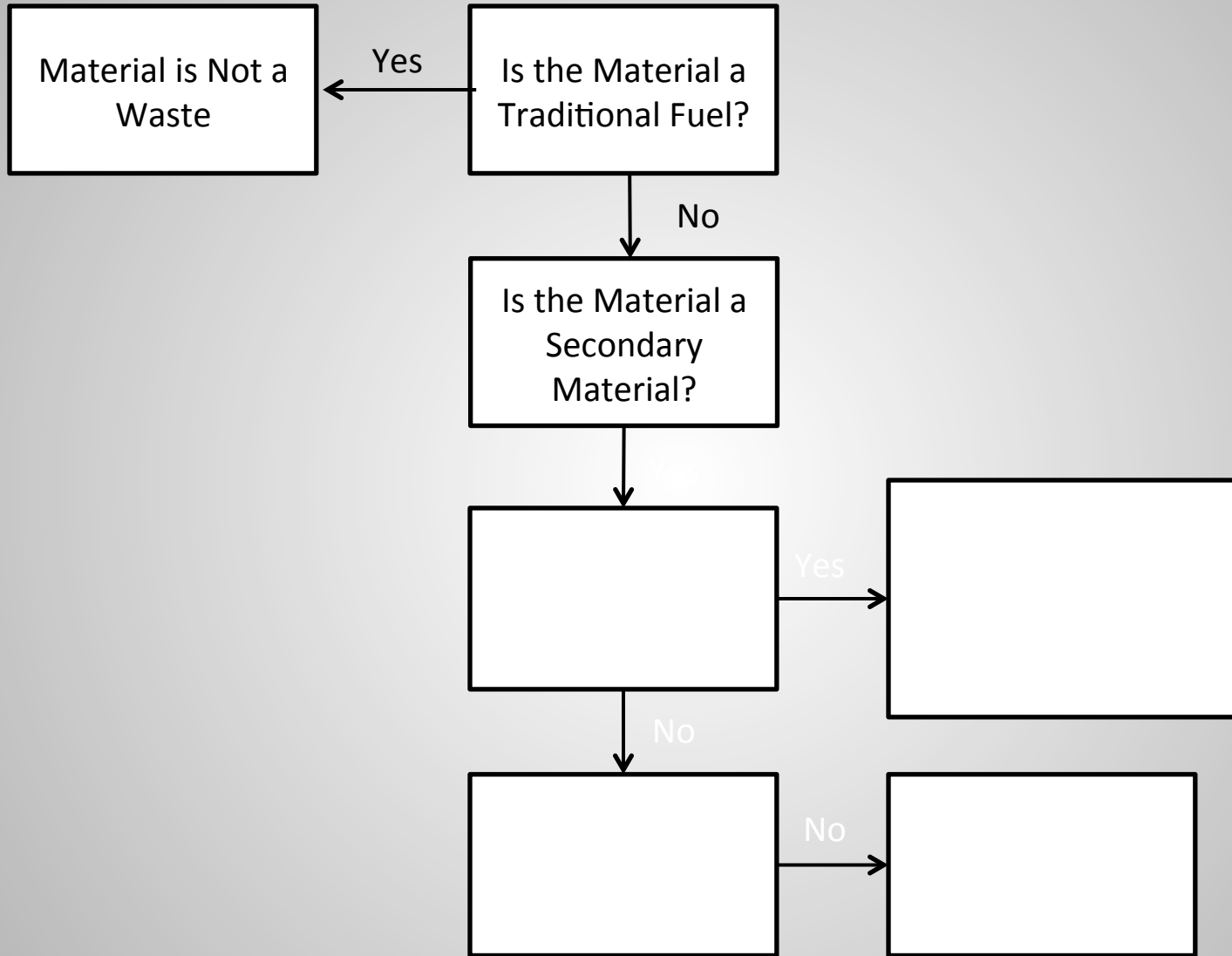
## 40 CFR Part 241

# NHSM Decision Tree



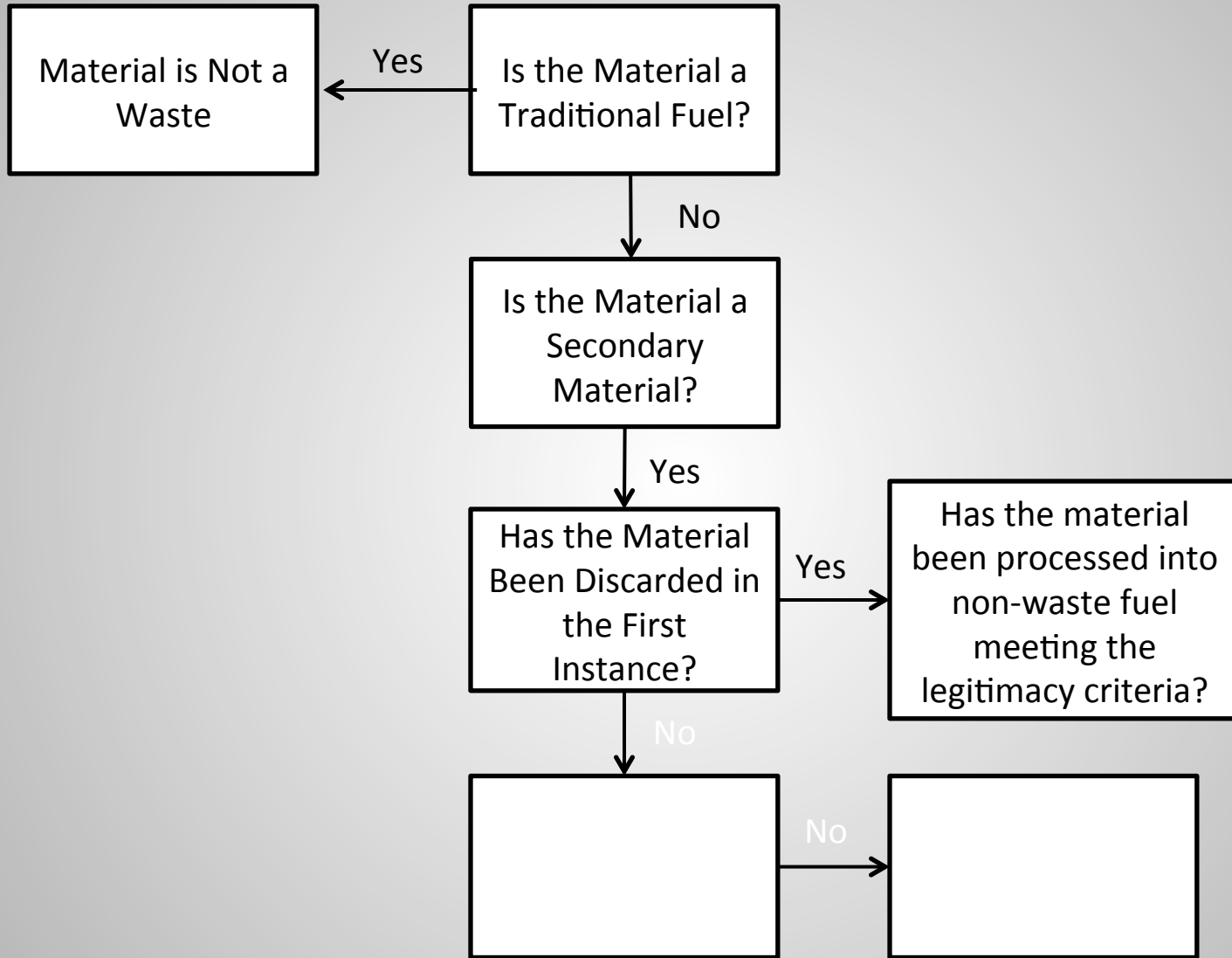
Traditional fuels means materials that are produced as fuels and are unused products that have not been discarded and therefore, are not solid wastes, including: (1) Fuels that have been historically managed as valuable fuel products rather than being managed as waste materials, including fossil fuels (e.g., coal, oil and natural gas), their derivatives (e.g., petroleum coke, bituminous coke, coal tar oil, refinery gas, synthetic fuel, heavy recycle, asphalts, blast furnace gas, recovered gaseous butane, and coke oven gas) and cellulosic biomass (virgin wood); and (2) alternative fuels developed from virgin materials that can now be used as fuel products, including used oil which meets the specifications outlined in 40 CFR 279.11, currently mined coal refuse that previously had not been usable as coal, and clean cellulosic biomass. These fuels are not secondary materials or solid wastes unless discarded.

# NHSM Decision Tree



*A secondary material means any material that is not the primary product of a manufacturing or commercial process, and can include post-consumer material, off-specification commercial chemical products or manufacturing intermediates, post-industrial material, and scrap.*

# NHSM Decision Tree

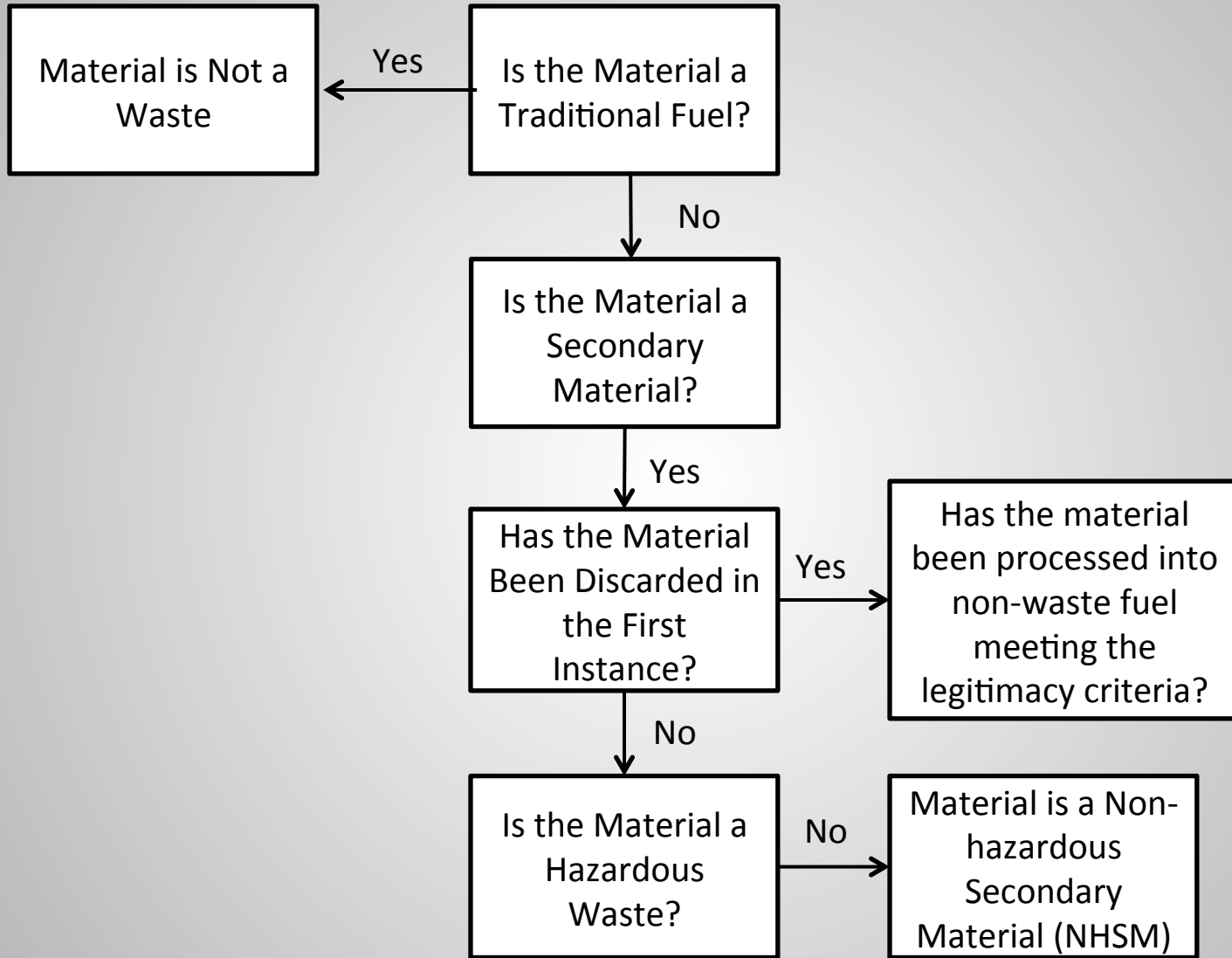


*Processing means any operations that transform discarded non-hazardous secondary material into a non-waste fuel or non-waste ingredient product. Processing includes, but is not limited to, operations necessary to: Remove or destroy contaminants; significantly improve the fuel characteristics of the material, e.g., sizing or drying the material in combination with other operations; chemically improve the as-fired energy content; or improve the ingredient characteristics. Minimal operations that result only in modifying the size of the material by shredding do not constitute processing for purposes of this definition.*

This provision is discussed in a preamble (76 FR 15537, March 21, 2011): “Because the resulting fuel/ingredient products are, in effect, reclaimed or extracted products from a recycling process, EPA considers such materials to be ‘new’ products that have not been discarded and therefore are not solid wastes. Until the NHSMs have been processed into a non-waste fuel or ingredient product meeting the legitimacy criteria, the discarded NHSM are generally assumed to be solid wastes.”

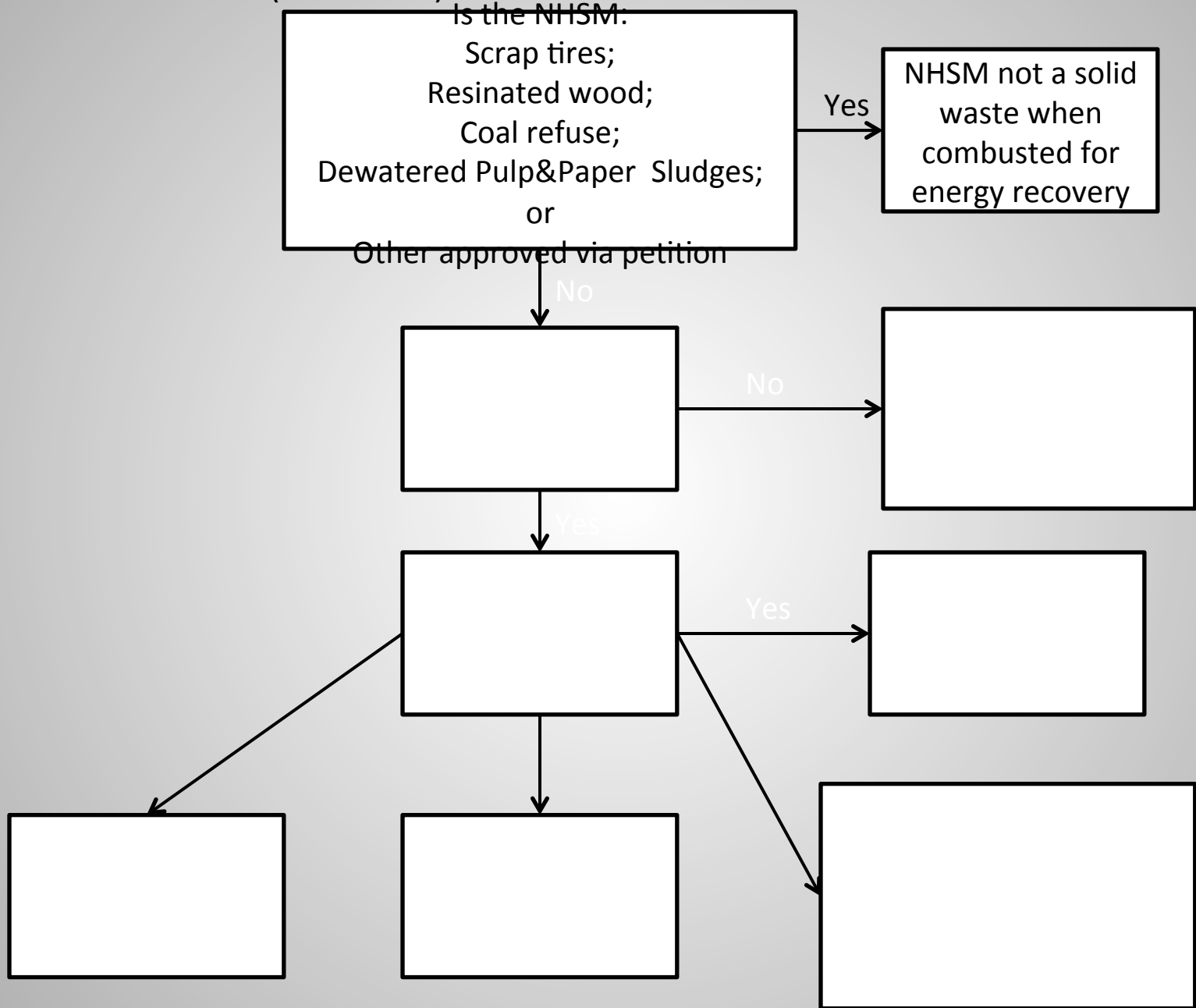
EPA has issued a number of [“comfort” letters](#) to companies producing these types of fuels.

# NHSM Decision Tree

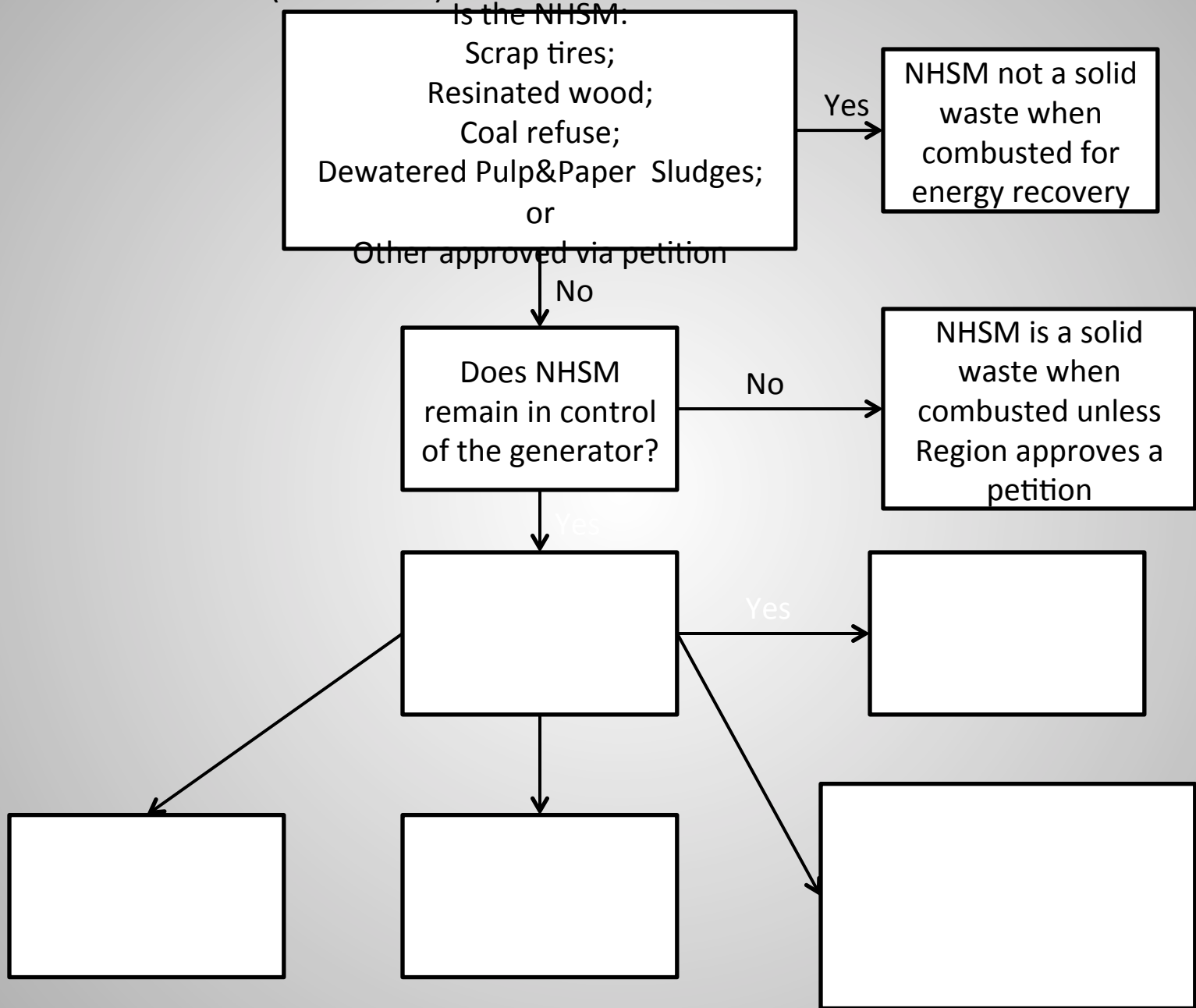




NHSM Decision Tree (continued)



# NHSM Decision Tree (continued)



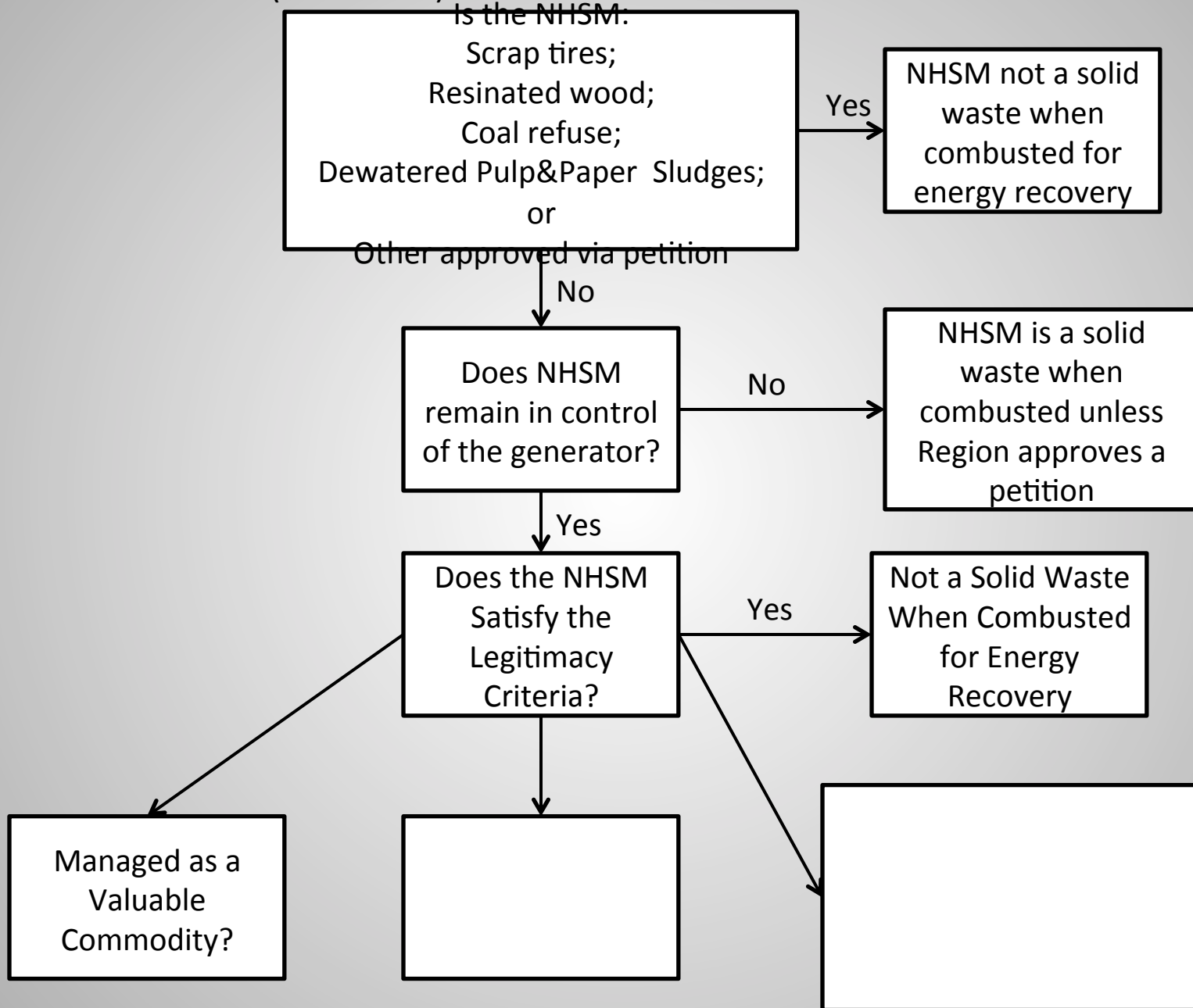
*Within the control of the generator means that the NHSM is generated and burned in combustion units at the generating facility; or that such material is generated and burned in combustion units at different facilities, provided the facility combusting the NHSM is controlled by the generator; or both the generating facility and the facility combusting the NHSM are under the control of the same person as defined in this section.*

*Generating facility means all contiguous property owned, leased, or otherwise controlled by the NHSM generator.*

*Control means the power to direct the policies of the facility, whether by the ownership of stock, voting rights, or otherwise, except that contractors who operate facilities on behalf of a different person as defined in this section shall not be deemed to “control” such facilities.*

*Person is defined as an individual, trust, firm, joint stock company, Federal agency, corporation (including government corporation), partnership, association, State, municipality, commission, political subdivision or a state, or any interstate body.*

# NHSM Decision Tree (continued)



EPA states “Regarding the term ‘valuable commodity’, EPA’s intent with this criterion is that NHSMs are managed in the same manner as materials that have been purchased or obtained at some cost, such as fuels or raw materials. We expect NHSMs that are used as fuels or ingredients to be managed effectively in order that their full value to the combustion process is realized.” (76 FR 15521 preamble; March 21, 2011)

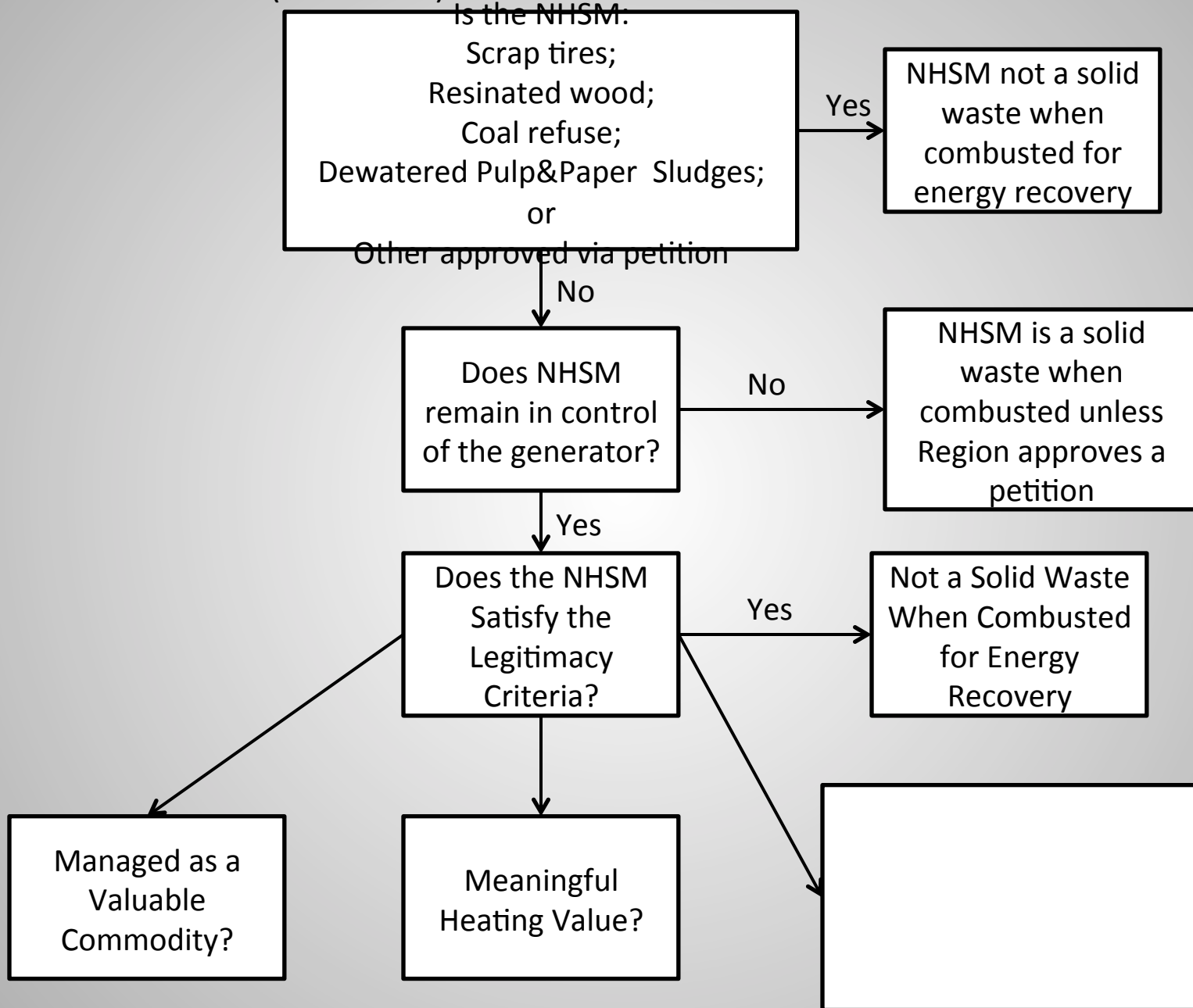
*The storage of the material prior to use must not exceed reasonable time frames.*

EPA chose not to specify a reasonable time frame “because such time frames could and will vary according to the NHSM and industry involved.” (76 FR 15540; March 21, 2011).

*Contained means the NHSM is stored in a manner that adequately prevents releases or other hazards to human health and the environment considering the nature and toxicity of the NHSM.*

For liquid materials, EPA “would expect that such NHSMs would be managed in tanks or similar type devices that are structurally sound to control the release of the NHSMs. The Agency would also expect that the types of controls that would typically be part of a tank or similar type device for liquid fossil fuels would also be part of any tank system that is used to manage the NHSMs. For example, if liquid fuels are stored in tanks with covers or they provide for secondary containment, the Agency would expect that the NHSM would also be stored in tanks with covers, with secondary containment so as to prevent releases to the environment.” (76 FR 15540 preamble, March 21, 2011).

# NHSM Decision Tree (continued)



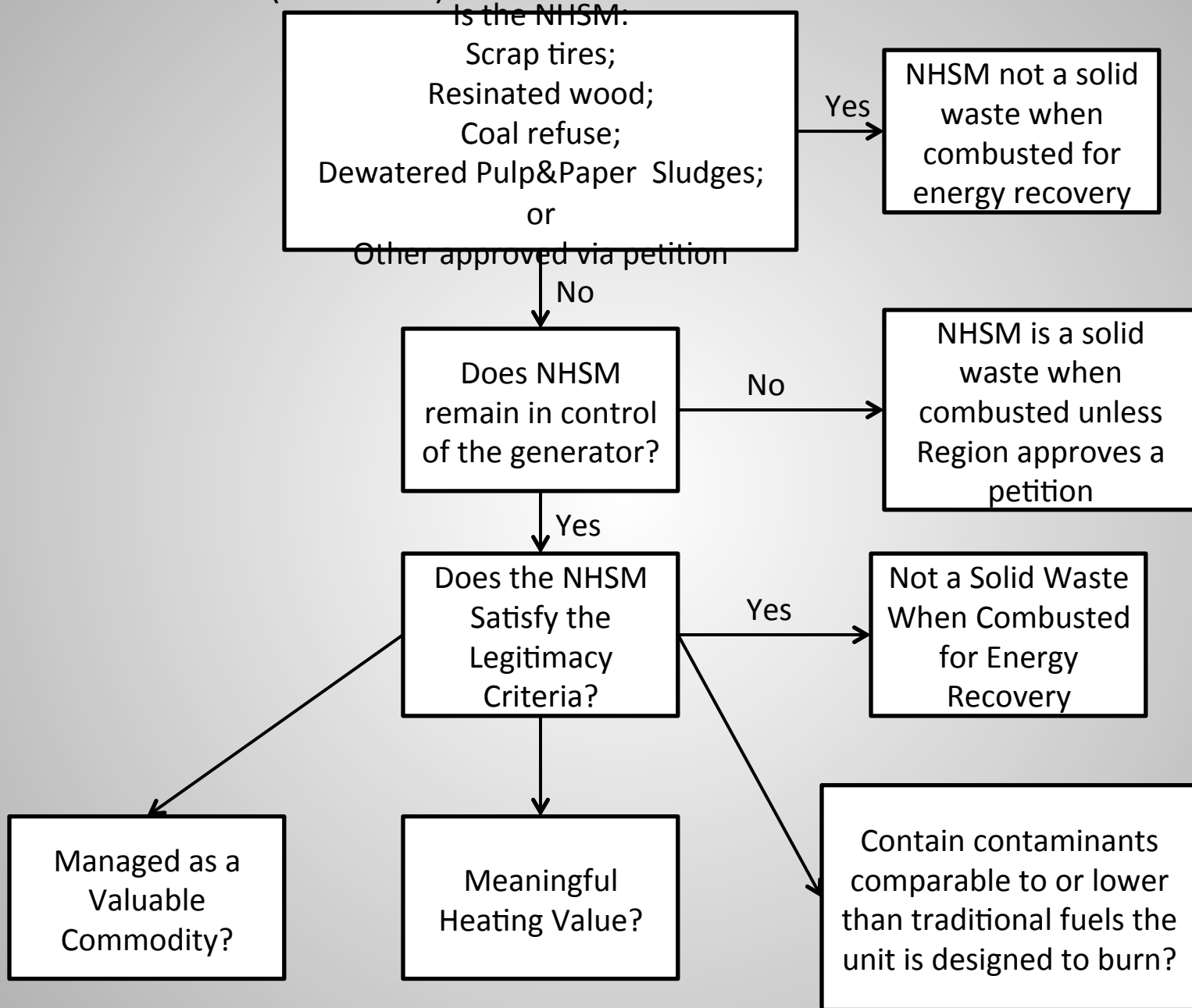
The material *must have a meaningful heating value and be used as a fuel in a combustion unit that recovers energy.*

EPA states “...we would consider NHSMs with an energy value greater than 5,000 Btu/lb, as-fired, to have a meaningful heating value. In addition, for facilities with energy recovery units that use a NHSM as a fuel with an energy content lower than 5,000 Btu/lb, as-fired, a person may demonstrate that a meaningful heating value is derived from the NHSM if the energy recovery unit can cost-effectively recover energy from the NHSM. Factors that are important in determining whether an energy recovery unit can cost-effectively recover energy include, but are not limited to, whether the facility encounters a cost savings due to not having to purchase significant amounts of traditional fuels they otherwise would need, whether they are purchasing the NHSM to use as a fuel, whether the NHSM can self-sustain combustion, and whether their operation produces energy that is sold for a profit (e.g. a utility boiler that is dedicated to burning a specific type of NHSM that is below 5,000 Btu/lb, but can show that their operation produces electricity that is sold for a profit.” (76 FR 15541 preamble; March 21, 2011).



EPA specifically states that a NHSM combusted in an incinerator or other device that does not recover energy cannot be a fuel, even if the NHSM has meaningful heating value and is used to maintain temperature in the device: “We recognize that incinerators and similar type units may accept NHSMs with a meaningful heating value and use that fuel to limit other types of fuels it needs to burn. However, the intent of an incinerator, and similar type units, is to destroy wastes, and, thus, NHSMs that are burned in such units are considered discarded, and thus, solid waste.” (76 FR 15541 preamble, March 21, 2011).

# NHSM Decision Tree (continued)



*In determining which traditional fuel(s) a unit is designed to burn, persons may choose a traditional fuel that can be or is burned in the particular type of boiler, whether or not the combustion unit is permitted to burn that traditional fuel.*

Contaminant means all pollutants listed in Clean Air Act sections [112\(b\)](#)\* or [129\(a\)\(4\)](#), with the following three modifications:

*The definition includes the elements chlorine, fluorine, nitrogen, and sulfur in cases where combustion will result in the formation of hydrogen chloride, hydrogen fluoride, or sulfur dioxide.*

*The definition does not include the following pollutants that are either unlikely to be found in NHSMs and products made from such materials or are adequately measured by other parts of this definition: hydrogen chloride, chlorine gas, hydrogen fluoride, sulfur dioxide, fine mineral fibers, particulate matter, coke oven emissions, opacity, diazomethane, white phosphorus, and titanium tetrachloride.*

*The definition does not include m-cresol, o-cresol, p-cresol, m-xylene, o-xylene, and p-xylene as individual contaminants distinct from the grouped pollutants of total cresols and total xylenes.*

EPA states in the preamble that “carbon monoxide is unlikely to be found in solid or liquid NHSMs and EPA expects that persons can use process knowledge to justify not testing for CO in these cases.” (78 FR 9143; February 7, 2013).

“While persons may satisfy the contaminant legitimacy criterion on a contaminant-by-contaminant bases, comparing groups of contaminants in the NHSM to similar groups in traditional fuels could also be appropriate, provided the grouped contaminants share physical and chemical properties that influence behavior in the combustion unit prior to the point where emissions occur. Volatility, the presence of specific elements, and compound structure are three such properties. One approach to grouping contaminants, as shown in Tables 7 and 8 below, could include TOX [total organic halogens], nitrogenated compounds, VOC, SVOC, D/F, PCB, PAH, and radionuclides. Persons may consider other groupings that they can show are technically reasonable.” (76 FR 80477 preamble, December 23, 2011)

Regarding grouping of heavy metals, EPA advises a person cannot group all 11 HAP metals, but some grouping by volatility is possible: “Metals can be grouped into volatile, semi-volatile, and low-volatile categories, but it is important to note that these distinctions can vary based on design differences in combustion units, operating temperatures, the physical form and species of the metal, and the presence of chlorine. Second, each metal clearly contains different elements. Finally, each metal is already a group of any compound containing the particular element, encompassing a wide array of compound structures. In the absence of other suggested grouping criteria or information, the EPA does not consider total metals to be an appropriate group.” (78 FR 9147 preamble, February 7, 2013).

EPA states “The comparable to or lower than” standard means any contaminants present in NHSMs that are within a small acceptable range, or lower than, the contaminant in traditional fuel.” They give an example where 500 ppm would be comparable to 475 ppm but 1,000 ppm would not be. Another example is where 1 ppm is comparable to non-detect but 50 ppm would not be. (76 FR 15523 preamble, March 21, 2011).

*In comparing contaminants between traditional fuel(s) and a NHSM, persons can use data for traditional fuel contaminants compiled from national surveys, as well as contaminant level data from the specific traditional fuel being replaced.*

EPA has posted documents showing traditional fuel data to serve as national databases for the comparisons:

[Contaminant Concentrations in Traditional Fuels: Tables for Comparison.](#)

A google search also identified a useful document published by the Agency for Toxic Substances and Disease Registry (ATSDR) for [fuel oil](#) that has a Table 3-2 providing data on organic HAPs. From this table, total OHAPs of 10 percent can be easily justified. Napthalenes alone are 8.2% and alkylbenzenes (includes toluene, xylene, benzene) are 5.9%.

Reference documents upon which the EPA tables are based have been researched so a site can compare to fuels their unit is actually designed to combust. The metals, fluorine, and chlorine data shown in the Tables below come from the reference document

[EPCRA Section 313, Industry Guidance: Electricity Generating Facilities.](#)



*To account for natural variability in contaminant levels, persons can use the full range of traditional fuel contaminant level, provided such comparisons also consider variability in the NHSM. Such comparisons are to be based on a direct comparison of the contaminant levels in both the NHSM and traditional fuels prior to combustion.*

Concerning the last sentence in the above excerpt, EPA states it considered making comparisons on a lb/MMBtu basis but has rejected that for the time being and says that comparisons are to be made on a concentration basis

EPA warns that one may not add up the maximums of the ranges from a given group of contaminants because the maximums for each contaminant in the group (e.g. VOCs) may come from different fuels (e.g. fuel oils). (78 FR 9147 preamble, February 7, 2013).