RESPONSE TO PEER REVIEW COMMENTS

Overall comments on the methodology / module

	1st review	Response	2nd review	Response
0.1	Need to add a definitions page to explain the many terms used. There are numerous terms and acronyms that may not be clear as to their definition (including. Project, Project proponent, project site, incineration site, etc.)	As per instructed by Lauren Nichols, nothing is put here	It is our understanding that a definitions page (including acronyms used in the document) will be added to this section.	This section has been added. Note that only terms specific to this methodology, that are not defined in the *ACR Standard*, are included here.

1. Background and Applicability

	1st review	Response	2nd review	Response
1.1	The applicability criteria section needs to provide further explanation regarding the various scenarios in which waste oils	We were somewhat confused by this question, so perhaps we could get	The document has to distinguish between the various 'recycling' methods	The authors do not feel it is feasible or necessary to track

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	are incinerated either as an alternative fuel (bunker fuel, cement kiln, etc) or simply destroyed by incineration. It then has to clarify that these 'end of life' methods of disposal (or reuse as a fuel) are excluded from being considered in this methodology.	some clarification. It is true that some used oil may be burned for energy production. Are the reviewers saying that oil that goes through an oil re-refining facility – which would have otherwise been incinerated to produce energy (as opposed to just being incinerated) – would not be eligible under this methodology? Obviously incineration alone is the main presumed baseline scenario and would thus be eligible for consideration under this methodology. As far as used oil combusted to produce energy is concerned, we believe this would also be eligible because the oil is still being incinerated and emitting CO2.	of oils including: (1) non-energy or heat producing incineration which is the assumed baseline; (2) heating or energy producing incineration; and (3) re-refining (proposed project); and (4) other uses such as for bunker oil (if this ever takes place). It is agreed that (4) is a small proportion of the total and is a short term 'recycling' method. The difference in emissions between (1) and (2) above is that when oils are used for heating or energy generation, they are in effect replacing other forms of energy (e.g. coal fired electricity or heating oil or diesel oil) which also have GHG emissions. But because this replaces other GHG emitting energy form, there is some abatement benefit, and is a slightly	separately and disqualify from the methodology transformer oil that is used for energy generation in the baseline. See our rationale at end of this document.

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			better alternative to (1). One suggestion is that when referring to waste oil incineration, the document makes clear that incineration is for other than heat or energy generation.	
1.2	Is it possible for this methodology to apply to other than the electric utility industry? Or is this the vast majority of where waste transformer oils are generated?	This methodology can be applied to any company with large electrical load that would have transformers on site. An example might be an aluminum producer. By far the largest industry using transformers is the power sector.	Suggestion is satisfied if wording includes industries other than electric utilities.	Clarification to this effect has been added in footnote 1.
1.3	The Applicability Criteria section needs coverage/discussion of a scenario where an organization has different waste treatment methods for different portions of their transformer oils (e.g. half of waste oils are incinerated and half are re-refined).	Please see response in 4.1, where we explicitly say recycling is not eligible for this activity because even recycled oil is eventually incinerated after a short-term re-use.	The 1st review comment did not refer to 'recycling' of oil but was meant to distinguish between oils that are incinerated (for heat or energy) and oils that are re-refined. See 2nd Review comment 1.1 above.	See response 1.1 above and at the end of this document.

2. Project Boundaries

	1st review	Response	2nd review	Response

	1st review	Response	2nd review	Response
2.1	It is suggested that the heading of Temporal Boundary be changed to "Project start date and crediting period".	Change has been made	Suggestion satisfied	n/a

3. Baseline Determination and Additionality

	1st review	Response	2nd review	Response
3.1	As for Section 1.2 above, it should be made clear that the basic assumption is that in the baseline, it is assumed that waste transformer oils are incinerated.	Sentence added in Section 3.1.	Recommend saying "all transformer oils are incinerated". Just saying "transformer oils are incinerated" doesn't give a specific volume amount. The term "recycling oil" needs to be clearly defined.	We realized that when we made the revisions the first time, the discount factor was removed in Section 4 but left in Section 3.1. This change has now been made. We have also stated that in the baseline, it is assumed all transformer oil is incinerated. As for the definition of recycling, see comment in 3.3 below
3.2	It may help to demonstrate the three additionality tests in a flow chart and break up the various steps into numbers or bullets.	We put this section in bullets, but there isn't really a step-wise process to this. Project Proponents can claim there are financial barriers and describe them, or technology barriers or institutional barriers. They	Suggestion satisfied.	n/a

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		could claim and describe one of the three or all three. Let us know if this is sufficient for this section.		
3.3	In additionality Test 1, need to clarify that the regulatory requirement of recycling of transformer oil does not include the re-refining of oil as a means of recycling. Is it common for regulation to mandate recycling of waste transformer oils by incineration?	See change in document in "TEST 1" Paragraph – we were not sure if this is what was intended, so please let us know if this is sufficient. Test 1 states that there cannot be a regulation that forces the recycling of transformer oil. So we said that there can be no regulation that mandates the recycling and re-refining of used oil. There is no regulation mandating the mode of disposal for used oil, just how to handle the toxic portions, such as PCBs. There is no regulatory mandate to undertake recycling or re-refining.	The term "recycling" needs to be clearly defined. Note: California requires the recycling of used oil. It does not distinguish between reuse and re-refining.	In the methodology, we try to make a distinction between recycling and re-refining. Recycling is simply re-using with little or no treatment. Re-refining is treating the old oil until it has the quality of virgin oil (see our first response in 4.1 below). In the case of California, we could err on the side of being conservative and state that any regulation that requires one of the following – either recycling OR re-refining – would not comply with Test 1. See revision in section 3.2. Also, definitions of recycled transformer oil and re-refined

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				transformer oil have been added to 1.4.
3.4	In additionality Test 2, amend "the utility industry" to "the electric utility industry".	Change has been made	Suggestion satisfied.	n/a

4. Quantification of Baseline and Project Emissions

	1st review	Response	2nd review	Response
4.1	Need more justification of using a default value for DF = 0.1 and it is not made clear why this is "conservative".	After considerable research, we have come to realize that very little data exists to support any particular level of baseline recycling. What we have found out, however, is that if oil is recycled, it is generally only for a short period of time before it is discarded and inevitably incinerated. We would recommend distinguishing between short-term recycling, which extends the life of the oil only slightly, and actual re-refining, which creates a product that is essentially new with a life-time equal to that of new oil. We know virtually no oil is *re-refined*, but we do know that some oil is *recycled*. The	Suggestion satisfied.	n/a

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		recommended approach is to explicitly state that short-term recycling is not eligible for the methodology. The only activity that would be eligible is the re-refining oil that creates a product equal in quality and lifetime to new oil. By explicitly excluding recycling, we could then eliminate the DF and add the following applicability criterion: *"This methodology cannot be applied to cases when transformer oil is taken out of the transformer and put into another unit, or other equipment, on a short-term basis after filtration or similar clean up. In some cases in the utility industry, this action occurs, and the oil can only be used for a short period of time and then discarded. This situation is more akin to a maintenance activity that extends the oil's life before it goes to incineration or, in the case of this method, re-refining.*		

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		Such an activity would not qualify for carbon credits. This methodology can only be applied when the oil is "re-refined" which in this context is defined as converting used oil into a recycled product that complies with the technical performance standards for electrical insulating oil described by published ASTM technical standards, or equivalent."		
4.2	See comments on section 1.2 above	We weren't sure if this was referring to Question 1.2 above (that methodology can be applied to any company with large electrical load with transformers on site) or Section 1.2 in the methodology (Applicability Criteria). Could the reviewer clarify for us?	The comment relates to the need for the baseline and project emissions to take account of (if and when) any waste oils that are incinerated to generate heat or energy, thereby replacing other fossil fuel(s).	See response 1.1 above and at the end of this document.
4.3	Page 12, several typos and the following changes should be made: Transformer oil is a highly specified product **and is** therefore a highly consistent material. Transformer oil "typically has a longer	Various changes made to this section.	Suggestion satisfied.	n/a

	1st review	Response	2nd review	Response
	chain that diesel also making it slightly more dense"….			
4.4	There is a need to cover leakage of emissions such as additional transport of waste oils to refining/recycling facility (for example where the recycling facility is further than the incineration site) or at least demonstrate that such leakage is insignificant.	We would argue that leakage does not need to be considered. Used transformer oil is transported in the baseline case to an incineration facility, and those incineration facilities may be far away from population areas (and near where power plants are located). Therefore, it is not clear that the transport would be any shorter or longer in the baseline case compared to the project case. Re-refining facilities may in fact be even closer to power plants and more populated areas because there are fewer emissions. In any case, we believe the difference – if there is one – would be negligible relative to the size of the emissions associated with combusting the waste oil. For this reason, we would argue that leakage	Agreed with the logic but the document has to state the assumption that leakage (due to different distances between baseline and project facility) is considered to be minimal. What is the re-refining facility is many thousands of miles further away than in the baseline???	We were saying that incineration facilities (not re-refining facilities) may be far away from population centers due to air pollution concerns. Change has been made in this section, although the section was moved from the leakage section to Section 2.3, per the suggestion of ACR, since emissions from transportation of used transformer oil are really project emissions rather than leakage. We now include these emissions in Table 1 in section 2.3, but list them as Excluded with the *de minimis* justification.

	1st review	Response	2nd review	Response
		from transport emissions is *de minimis.*		

5. Data Collection and Monitoring

	1st review	Response	2nd review	Response
5.1	No comments	n/a	n/a	n/a

6. Emissions Ownership

	1st review	Response	2nd review	Response
6.1	Relating to section 6.1, how can double-counting of emission reductions be avoided? Need to ensure that only the waste oil generator/recycler 'owns' the emission reductions.	We could put in a requirement saying that the Project Proponent, when obtaining the waste oil from the utility or industry client, will review the websites and other public material of the utilities that supply the oil to make sure these companies make no claims about the GHG benefits. This is something similar the truck stop electrification (TSE) methodology, which states: "Proponents shall review available material from the users of TSE systems (both fleets and their owners) to ensure that none are claiming reductions in their	Suggestion satisfied.	n/a

	1st review	Response	2nd review	Response
		own carbon footprint from the use of TSE systems. If such claims are made, the Project Proponent shall request the truck fleets or their owners remove such claims from public materials …" In this case, if utilities or industrial users are claiming the GHG benefits of the avoidance of combustion, the Project Proponent could request the utility not to make those claims. If unsuccessful in this effort, no ERTs would be issued for that quantity of oil. See addition in Section 6.1.		

7. QA/QC Procedures and Risk Mitigation

	1st review	Response	2nd review	Response
	No comments	n/a	n/a	n/a

COMMENT 1.1: We have done much investigation, and we have found no studies or information about where the waste oil that the Project Proponent would be collecting would have gone in the absence of this project. In many cases, the oil contains PCBs and cannot be incinerated in just any oil-fired, industrial boiler for fuel. So unfortunately, there is no way to separate how much would have been used for fuel use or simply incinerated. In addition, we believe the question is not necessarily relevant to the GHG

considerations if one takes into account the life cycle of transformer oil. In the project case the oil has multiple life cycles to the extent that, for the amount of oil processed in the project, there is permanent displacement of the need for any new oil from the extraction of crude oil. Final disposal is no longer required and all disposal-related emissions are removed.

In the baseline case, the oil is used once and disposed of. Disposal will result predominantly in incineration which in some cases might possibly also displace other fuels (though note that in an increasing number of situations, fuels or energy being displaced by baseline oil incineration may include hydro, wind, solar or nuclear or other lower carbon energy systems). In the project case, it is reused at least once. For the sake of illustration, let's say the same oil is used twice. In the baseline, we have x emissions, but if that same oil is used twice in the project case, we get twice as much use per unit of oil before it is incinerated. Therefore, we only see half of the emissions that would have otherwise taken place. If one looks at transformer oil in terms of its lifecycle emissions, the re-use of that oil means its lifecycle emissions is reduced from baseline. Given that the process has greater than 99% recovery of the used oil, in the project case the oil is essentially never disposed of and as such has no effective disposal related emission per usage cycle.

Another way of expressing this argument it is that in baseline, a gallon of oil is incinerated. It generated 100 kg of CO2. In the project case, a gallon of oil is used two times (in reality, it’s many times). In this case, a gallon of recycled oil is replacing the use of a virgin gallon. When that gallon is eventually incinerated, it did the job of two gallons. In the baseline, two gallons would have been used, generating 200 kg of CO2. But only 100 kg of CO2 was produced, so there is a reduction in the lifecycle of that oil of 100 kg. With multiple life cycles available for each gallon, each recycled gallon can do the job of many virgin gallons. Our view is that we should also look at that lifecycle independently of what that gallon was incinerated to do, that is, independent of the potential for other fuel displacement at the time of disposal.