Renewable Energy Standard Reform Working Group
Submitted Public Comment – Pike Porter
11/14/2023

RES Reform Working Group Committee Members,

Questions about how the affordable heat act may relate to the RES arose in your last meeting. I want to share with you how VGS and Burlington Electric (BED) propose to use the Tier 3 RES and clean heat credits created by the Affordable Heat Act to undermine the goal of reducing Vermont's carbon emissions.

Exhibit A are two slides from a BED and VGS presentation to the Burlington City Council which claims that the proposed District Energy System will reduce CO2 emissions by about 13,000 tons annually. They claim this because VGS and BED also claim that burning wood is carbon-neutral. Climate scientists have thoroughly debunked this belief. Even so, at Vermont's current rate of deforestation, even by the accounting methods used by BED, ***Vermont forests will be net carbon emitters in only 25 years*** if action by our legislature is not taken. Using the MMBTU amounts on the first slide and the carbon emissions factors found in the EPA website: https://www.epa.gov/climateleadership/ghg-emission-factors-hub, we find that the DES will actually *increase* CO2 emissions by 6,778 tons annually.

Wood: 93.80kg CO2 per mmBtu 93.8 X 190,000 MMBTU = 17,822,000 kg CO2
Natural Gas: 53.06kg CO2 per mmBtu X 220,000 MMBTU = 11,673,200 kg CO2

Net Increase by switching to wood is 6,148,800 kg CO2 per year = 6,778 tons per year

As exhibit B demonstrates, BED plans to use this plan to meet its Tier 3 energy transformation obligations. If this is allowed, BED has no other plans to reduce emissions through the Tier 3 requirements. Slide two in Exhibit A shows that VGS also plans to take all clean heat credits generated by this scheme, allowing VGS to continue using fossil gas elsewhere in Vermont.

I and many other Vermonters not represented by the environmental groups sitting at your table believe that real RES reform is needed to accurately account for the carbon emissions from wood-combustion so that schemes like this cannot be proposed, and so that double-dipping as VGS and BED propose will not be allowed.

We need a zero-carbon electricity goal and we need a RES that pushes Vermont to a zero carbon goal. Wood combustion cannot be allowed, Hydro-Quebec power cannot be allowed.

Thanks.

Pike Porter

NET ZERO ENERGY
BURLINGTON VERMONT

Why District Energy in Burlington?

- Improve McNeil's efficiency 10%
- Use local renewable thermal resource instead of fossil gas
- Reduces over 220,000 MMBTU of natural gas usage *every year* by creating 190,000 MMBTU of renewable steam (including 3 steam sources - waste heat, steam extraction, and supplementary electric boiler), plus 34,000 MMBTU of efficiency savings
- Cut commercial sector natural gas use 16% in Burlington, cut Burlington carbon dioxide emissions approximately 13,000 tons annually, taking single-biggest step to move towards Burlington's Net Zero Energy 2030 Roadmap goal

NET ZERO ENERGY
BURLINGTON VERMONT

Key Financial Terms

- Capital investment fully financed through Burlington District Energy non-profit, zero taxpayer or ratepayer financing, zero general fund dollars;
- BED and VGS provide incentives under State programs:
  - BED will use Tier III credits under Renewable Energy Standard
  - VGS will use Clean Heat credits under recently-passed Affordable Heat Act
- Burlington District Energy manages construction and operation of project;
- UVM Medical Center purchases the renewable steam and receives the renewable attributes.

To: City Council

From: James Gibbons, Director of Policy & Planning
Emily Stebbins-Wheelock, CFO and Manager of Strategy and Innovation
Darren Springer, General Manager

Date: October 23, 2023

Re: Strategic electrification (Tier 3) program credits for District Energy

This memo describes economics of the Burlington Electric Department (BED)'s potential $665,000 annual Tier 3 program incentive for the proposed District Energy System (DES).

Background

In 2015, the Vermont legislature passed the Vermont Renewable Energy Standard (RES), which sets forth three requirements that began in 2017. Under "Tier 3" of the Vermont RES, Vermont distribution utilities offer programs designed to encourage customers to reduce fossil fuel use and emissions, particularly for heating and transportation. Each utility has a Tier 3 obligation that is based on a percentage of its retail sales; this percentage increases annually. Utilities may meet their Tier 3 obligation either through program activity, by retiring renewable energy credits from small, new, Vermont-based generators, or paying an alternative compliance payment (ACP). Paying the ACP would send customer dollars out of Burlington to a state fund. Utilities pursuing custom projects, such as this DES proposal, may seek prior approval by the Vermont Public Utility Commission (PUC), including the approved number of Tier 3 program "credits" or megawatt-hour-equivalents (MWhe) allowed for each program measure and the anticipated costs to deliver each program.

Because the proposed DES would reduce commercial sector natural gas use in Burlington, and hence fossil fuel emissions, the opportunity exists for BED to implement a custom Tier 3 program that would provide an incentive to the DES, and generate Tier 3 program credits for BED that would count toward BED's Tier 3 compliance obligation. BED would submit this incentive design to the PUC for prior approval as noted above.

Analysis/Assumptions

In evaluating the economics of offering a Tier 3 incentive in support of the DES, BED considered several factors:

1. The cost of BED's existing "prescriptive" Tier 3 programs[1] compared to the cost of the DES proposal, both in terms of expense and in cash outlays.

[1] "Prescriptive" programs are those with defined incentives associated with a defined fossil fuel reduction/MWhe, such as rebates for electric vehicles and heat pumps. "Custom" programs are those where the incentive amount and the MWhe savings are uniquely determined based on the details of each project, such as a geothermal heat pump for a large commercial building.

2. The fact that all of BED's existing Tier 3 programs result in increased electric sales/revenue, as well as electric utility costs to serve load. If incremental revenues exceed incremental costs, those "excess" revenues can help offset a portion of the cash obligation for incentive. DES, by contrast, is not expected to materially affect BED's retail revenues or costs.
3. The impact of potential load control rates on retail revenues and costs to serve new heating and transportation (i.e. EV) loads.
4. The reasonableness of current statewide estimates for incremental electric sales from heat pumps, which BED believes are too high based on its program experience to-date.
5. The significant variability and uncertainty associated with the level (number of credits generated) and the costs of future prescriptive Tier 3 program activity based on BED's experience to-date.
6. The approach of adding DES Tier 3 credits to existing Tier 3 program activity.

In evaluating the proposed DES Tier 3 incentive considering the above factors, certain assumptions were made. Changes in these assumptions will affect the results of the financial assessment.

1. The Vermont RES and its existing Tier 3 requirements will continue unchanged for the NPV evaluation period.
2. That the implementation of the Clean Heat Standard does not reduce the number of Tier 3 credits BED can claim and that the 225,000 MMBTU annually used to derive the 25,440 current estimate of Tier 3 credits is accurate.
3. No custom Tier 3 programs are assumed due to the unpredictability of their timing, scale, and cost. These programs can, however, be significantly cost-effective on a per-credit basis.
4. BED will continue its present prescriptive Tier 3 programs to provide broad customer access to strategic electrification.
5. Prescriptive Tier 3 program activity is held constant at FY 2024 budgeted levels.
6. The cost of BED's prescriptive Tier 3 program activity is increased annually by an inflation factor of 2.25%.
7. Net Present Value (NPV) of the net cost per Tier 3 credit over time is the best metric for evaluating the cost-effectiveness of the DES Tier 3 proposal compared to other alternatives for Tier 3 compliance. In this context, the net cost per credit is the cost of acquiring the credit less any expected retail revenues from the measure in question.
8. Retail electric rates for heat pumps will need to be discounted to support broad adoption and make thermal electrification cost-competitive with natural gas. Retail rates for EVs will continue to be discounted in recognition of the restrictions on charging under BED's present EV Tariff. Not all customers who adopt the measures will elect to be on the rates.
9. Annual DES Tier 3 program incentive of $665,000, held flat (no inflation factor) for the 20-year period.
10. No impact of DES on BED's electric sales or economic benefit to McNeil of the DES proposal has been included, (i.e, no net revenue is assumed from the electric boiler to be installed as part of the DES).
11. No participation by the other Joint Owners of McNeil in the DES Tier 3 program is assumed. Participation by the other Joint Owners of McNeil would reduce BED's incentive investment and Tier 3 credit bank.

12. Discount rate of 4.76%, consistent with the assumptions in BED's 2023 Integrated Resource Plan and the current interest rate environment.
13. Any increases in underlying utility costs to serve will be offset by corresponding increases in electric rates.

Conclusions

Price of Tier 3 Credits

The proposed DES program is estimated to have a gross NPV cost of $15.76/credit in current dollars. This compares favorably with the NPV of the assumed average gross cost of BED's existing Tier 3 programs of $35.02/credit using the above assumptions. A DES Tier 3 program benefits in this comparison from a level $/credit contribution structure over the twenty-year period, whereas the cost of other Tier 3 program activities is assumed to increase over time to keep up with inflation, address new technologies, and encourage greater adoption as noted above.

This "gap" between the cheaper gross program cost of the DES proposal and the gross cost of existing programs is somewhat closed, however, by the anticipated net electric revenues resulting from the existing programs that will not result at the same level from DES. Subtracting the NPV of incremental electric revenue ($15.97/credit) from the NPV gross cost ($35.02/credit) of prescriptive programs yields a net NPV cost for prescriptive programs of $19.05/credit, compared with the estimated DES net NPV cost of $15.76/credit.

This analysis shows that at the above assumptions, the proposed DES program appears to be more cost-effective on a per-credit basis compared to existing prescriptive Tier 3 program offerings. The DES per-credit NPV costs would be materially affected if the number of credits generated was altered (see assumption #2).

Volume of Tier 3 Credits

Based on the above assumptions, without a DES Tier 3 program, BED's prescriptive Tier 3 programs are expected to generate sufficient credits each year to meet BED's Tier 3 annual compliance requirements through 2025. In addition, excess credits from programs in these years will be "banked" for use in future periods. Beginning in 2026, however, BED projects that it will need to begin to use some banked credits along with credits from current-year program activity to meet its Tier 3 obligation, as the compliance obligation rises without a corresponding increase in program activity. Beginning in 2032, BED projects that it will have drawn its Tier 3 credit bank down to zero and will not have sufficient credits to meet its annual obligation. At this point, BED would begin to be exposed to ACPs, at a projected cost of $88.06/credit in 2032, which would be paid into a state fund.

The proposed DES Tier 3 program is projected to generate 25,441 credits per year. This is a significant number of credits (more than BED's total Tier 3 requirement through 2025). With the additional credits from the DES program, BED projects that it will have excess credits relative to its compliance needs throughout the 20-year period evaluated, resulting in banking of excess credits in all years, and a cumulative bank at the end of the 20-year period of more than 250,000 Tier 3 credits. To support attainment of Burlington's Net Zero Energy goal, BED would be purposefully exceeding its Tier 3 compliance requirements, but at a per-credit cost (gross and net) that is projected to be lower than that of current prescriptive programs. BED has assumed it would need to exceed the Tier 3 requirements in

support of City climate goals given that, while Tier 3 is ambitious, the Net Zero Energy Roadmap trajectory is even more ambitious in its emissions reduction goals.

Overall NPV Savings and Costs

Considering the total 20-year NPV cost of meeting BED's Tier 3 obligations, the financial modeling BED has conducted shows that the DES Tier 3 incentive proposal would reduce BED's Tier 3 compliance expense by $10.6 million at a NPV cash cost of $7.2 million compared to existing prescriptive Tier 3 programs. The DES Tier 3 proposal represents a significant Tier 3 investment over a 20-year period, but it does not appear unreasonable economically based on the above assumptions. BED intends to continue its strong electrification incentives alongside any incentive investment in DES and would plan accordingly for future Tier 3 program plans and budgets.

Emission Factors for Greenhouse Gas Inventories

Last Modified: 12 September 2023

Blue text indicates an update from the 2022 version of this document.

Typically, greenhouse gas emissions are reported in units of carbon dioxide equivalent (CO_2e). Gases are converted to CO_2e by multiplying by their global warming potential (GWP). The emission factors listed in this document have not been converted to CO_2e. To do so, multiply the emissions by the corresponding GWP listed in the table below.

Gas	100-Year GWP
CH_4	25
N_2O	298

Source: Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment Report (AR4), 2007. See the source note to Table 11 for further explanation.

Table 1 Stationary Combustion

Fuel Type	Heat Content (HHV)	CO_2 Factor	CH_4 Factor	N_2O Factor	CO_2 Factor	CH_4 Factor	N_2O Factor
	mmBtu per short ton	kg CO_2 per mmBtu	g CH_4 per mmBtu	g N_2O per mmBtu	kg CO_2 per short ton	g CH_4 per short ton	g N_2O per short ton
Coal and Coke							
Anthracite Coal	25.09	103.69	11	1.6	2,602	276	40
Bituminous Coal	24.93	93.28	11	1.6	2,325	274	40
Sub-bituminous Coal	17.25	97.17	11	1.6	1,676	190	28
Lignite Coal	14.21	97.72	11	1.6	1,389	156	23
Mixed (Commercial Sector)	21.39	94.27	11	1.6	2,016	235	34
Mixed (Electric Power Sector)	19.73	95.52	11	1.6	1,885	217	32
Mixed (Industrial Coking)	26.28	93.90	11	1.6	2,468	289	42
Mixed (Industrial Sector)	22.35	94.67	11	1.6	2,116	246	36
Coal Coke	24.80	113.67	11	1.6	2,819	273	40
Other Fuels - Solid							
Municipal Solid Waste	9.95	90.70	32	4.2	902	318	42
Petroleum Coke (Solid)	30.00	102.41	32	4.2	3,072	960	126
Plastics	38.00	75.00	32	4.2	2,850	1,216	160
Tires	28.00	85.97	32	4.2	2,407	896	118
Biomass Fuels - Solid							
Agricultural Byproducts	8.25	118.17	32	4.2	975	264	35
Peat	8.00	111.84	32	4.2	895	256	34
Solid Byproducts	10.39	105.51	32	4.2	1,096	332	44
Wood and Wood Residuals	17.48	93.80	7.2	3.6	1,640	126	63
	mmBtu per scf	kg CO_2 per mmBtu	g CH_4 per mmBtu	g N_2O per mmBtu	kg CO_2 per scf	g CH_4 per scf	g N_2O per scf
Natural Gas							
Natural Gas	0.001026	53.06	1.0	0.10	0.05444	0.00103	0.00010
Other Fuels - Gaseous							
Blast Furnace Gas	0.000092	274.32	0.022	0.10	0.02524	0.000002	0.000009
Coke Oven Gas	0.000599	46.85	0.48	0.10	0.02806	0.000288	0.000060
Fuel Gas	0.001388	59.00	3.0	0.60	0.08189	0.004164	0.000833
Propane Gas	0.002516	61.46	3.0	0.60	0.15463	0.007548	0.001510
Biomass Fuels - Gaseous							
Landfill Gas	0.000485	52.07	3.2	0.63	0.025254	0.001552	0.000306
Other Biomass Gases	0.000655	52.07	3.2	0.63	0.034106	0.002096	0.000413
	mmBtu per gallon	kg CO_2 per mmBtu	g CH_4 per mmBtu	g N_2O per mmBtu	kg CO_2 per gallon	g CH_4 per gallon	g N_2O per gallon
Petroleum Products							
Asphalt and Road Oil	0.158	75.36	3.0	0.60	11.91	0.47	0.09
Aviation Gasoline	0.120	69.25	3.0	0.60	8.31	0.36	0.07
Butane	0.103	64.77	3.0	0.60	6.67	0.31	0.06
Butylene	0.105	68.72	3.0	0.60	7.22	0.32	0.06
Crude Oil	0.138	74.54	3.0	0.60	10.29	0.41	0.08
Distillate Fuel Oil No. 1	0.139	73.25	3.0	0.60	10.18	0.42	0.08
Distillate Fuel Oil No. 2	0.138	73.96	3.0	0.60	10.21	0.41	0.08
Distillate Fuel Oil No. 4	0.146	75.04	3.0	0.60	10.96	0.44	0.09
Ethane	0.068	59.60	3.0	0.60	4.05	0.20	0.04
Ethylene	0.058	65.96	3.0	0.60	3.83	0.17	0.03
Heavy Gas Oils	0.148	74.92	3.0	0.60	11.09	0.44	0.09
Isobutane	0.099	64.94	3.0	0.60	6.43	0.30	0.06
Isobutylene	0.103	68.86	3.0	0.60	7.09	0.31	0.06
Kerosene	0.135	75.20	3.0	0.60	10.15	0.41	0.08
Kerosene-Type Jet Fuel	0.135	72.22	3.0	0.60	9.75	0.41	0.08
Liquefied Petroleum Gases (LPG)	0.092	61.71	3.0	0.60	5.68	0.28	0.06
Lubricants	0.144	74.27	3.0	0.60	10.69	0.43	0.09
Motor Gasoline	0.125	70.22	3.0	0.60	8.78	0.38	0.08
Naphtha (<401 deg F)	0.125	68.02	3.0	0.60	8.50	0.38	0.08
Natural Gasoline	0.110	66.88	3.0	0.60	7.36	0.33	0.07
Other Oil (>401 deg F)	0.139	76.22	3.0	0.60	10.59	0.42	0.08
Pentanes Plus	0.110	70.02	3.0	0.60	7.70	0.33	0.07
Petrochemical Feedstocks	0.125	71.02	3.0	0.60	8.88	0.38	0.08
Propane	0.091	62.87	3.0	0.60	5.72	0.27	0.05
Propylene	0.091	67.77	3.0	0.60	6.17	0.27	0.05
Residual Fuel Oil No. 5	0.140	72.93	3.0	0.60	10.21	0.42	0.08
Residual Fuel Oil No. 6	0.150	75.10	3.0	0.60	11.27	0.45	0.09
Special Naphtha	0.125	72.34	3.0	0.60	9.04	0.38	0.08
Unfinished Oils	0.139	74.54	3.0	0.60	10.36	0.42	0.08
Used Oil	0.138	74.00	3.0	0.60	10.21	0.41	0.08
Biomass Fuels - Liquid							
Biodiesel (100%)	0.128	73.84	1.1	0.11	9.45	0.14	0.01
Ethanol (100%)	0.084	68.44	1.1	0.11	5.75	0.09	0.01
Rendered Animal Fat	0.125	71.06	1.1	0.11	8.88	0.14	0.01
Vegetable Oil	0.120	81.55	1.1	0.11	9.79	0.13	0.01
Biomass Fuels - Kraft Pulping Liquor, by Wood Furnish							
North American Softwood		94.4	1.9	0.42			
North American Hardwood		93.7	1.9	0.42			
Bagasse		95.5	1.9	0.42			
Bamboo		93.7	1.9	0.42			
Straw		95.1	1.9	0.42			

Source:

Federal Register EPA; 40 CFR Part 98; e-CFR, (see link below). Table C-1 and Table C-2 (78 FR 71950, Nov. 29, 2013, as amended at 81 FR 89252, Dec. 9, 2016), Table AA-1 (78 FR 71965, Nov. 29, 2013).

https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-98

Notes:

Emission factors are per unit of heat content using higher heating values (HHV). If heat content is available from the fuel supplier, it is preferable to use that value. If not, default heat contents are provided.

The factors represented in the table above represent combustion emissions only (tank-to-wheel) and do not represent upstream emissions or well-to-wheel emissions.

Table 2 Mobile Combustion CO_2

Fuel Type	kg CO_2 per unit	Unit
Aviation Gasoline	8.31	gallon
Biodiesel (100%)	9.45	gallon
Compressed Natural Gas (CNG)	0.05444	scf
Diesel Fuel	10.21	gallon
Ethanol (100%)	5.75	gallon
Kerosene-Type Jet Fuel	9.75	gallon
Liquefied Natural Gas (LNG)	4.50	gallon
Liquefied Petroleum Gases (LPG)	5.68	gallon
Motor Gasoline	8.78	gallon
Residual Fuel Oil	11.27	gallon

Source:
Federal Register EPA; 40 CFR Part 98; e-CFR, (see link below). Table C-1 (78 FR 71950, Nov. 29, 2013, as amended at 81 FR 89252, Dec. 9, 2016)
https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-98

Notes:
LNG: The factor was developed based on the CO_2 factor for Natural Gas factor and LNG fuel density from GREET1_2022.xlsx Model, Argonne National Laboratory (Fuel_Specs worksheet).
The factors represented in the table above represent combustion emissions only (tank-to-wheel) and do not represent upstream emissions or well-to-wheel emissions.

Table 3 Mobile Combustion CH_4 and N_2O for On-Road Gasoline Vehicles

Vehicle Type	Year	CH_4 Factor (g / mile)	N_2O Factor (g / mile)
Gasoline Passenger Cars	1973-1974	0.1696	0.0197
	1975	0.1423	0.0443
	1976-1977	0.1406	0.0458
	1978-1979	0.1389	0.0473
	1980	0.1326	0.0499
	1981	0.0802	0.0626
	1982	0.0795	0.0627
	1983	0.0782	0.0630
	1984-1993	0.0704	0.0647
	1994	0.0617	0.0603
	1995	0.0531	0.0560
	1996	0.0434	0.0503
	1997	0.0337	0.0446
	1998	0.0240	0.0389
	1999	0.0215	0.0355
	2000	0.0175	0.0304
	2001	0.0105	0.0212
	2002	0.0102	0.0207
	2003	0.0095	0.0181
	2004	0.0078	0.0085
	2005	0.0075	0.0067
	2006	0.0076	0.0075
	2007	0.0072	0.0052
	2008	0.0072	0.0049
	2009	0.0071	0.0046
	2010	0.0071	0.0046
	2011	0.0071	0.0046
	2012	0.0071	0.0046
	2013	0.0071	0.0046
	2014	0.0071	0.0046
	2015	0.0068	0.0042
	2016	0.0065	0.0038
	2017	0.0054	0.0018
	2018	0.0052	0.0016
	2019	0.0051	0.0015
	2020	0.0050	0.0014
Gasoline Light-Duty Trucks (Vans, Pickup Trucks, SUVs)	1973-1974	0.1908	0.0218
	1975	0.1634	0.0513
	1976	0.1594	0.0555
	1977-1978	0.1614	0.0534
	1979-1980	0.1594	0.0555
	1981	0.1479	0.0660
	1982	0.1442	0.0681
	1983	0.1368	0.0722
	1984	0.1294	0.0764
	1985	0.1220	0.0806
	1986	0.1146	0.0848
	1987-1993	0.0813	0.1035
	1994	0.0646	0.0982
	1995	0.0517	0.0908
	1996	0.0452	0.0871
	1997	0.0452	0.0871
	1998	0.0412	0.0787
	1999	0.0333	0.0618
	2000	0.0340	0.0631
	2001	0.0221	0.0379
	2002	0.0242	0.0424
	2003	0.0221	0.0373
	2004	0.0115	0.0088
	2005	0.0105	0.0064
	2006	0.0108	0.0080
	2007	0.0103	0.0061
	2008	0.0095	0.0036
	2009	0.0095	0.0036
	2010	0.0095	0.0035
	2011	0.0096	0.0034
	2012	0.0096	0.0033
	2013	0.0095	0.0035
	2014	0.0095	0.0033
	2015	0.0094	0.0031
	2016	0.0091	0.0029
	2017	0.0084	0.0018
	2018	0.0081	0.0015
	2019	0.0080	0.0013
	2020	0.0079	0.0012
Gasoline Heavy-Duty Vehicles	≤1980	0.4604	0.0497
	1981-1984	0.4492	0.0538
	1985-1986	0.4090	0.0515
	1987	0.3675	0.0849
	1988-1989	0.3492	0.0933
	1990-1995	0.3246	0.1142
	1996	0.1278	0.1680
	1997	0.0924	0.1726
	1998	0.0655	0.1750
	1999	0.0648	0.1724
	2000	0.0630	0.1660
	2001	0.0577	0.1468
	2002	0.0634	0.1673
	2003	0.0602	0.1553
	2004	0.0298	0.0164
	2005	0.0297	0.0083
	2006	0.0299	0.0241
	2007	0.0322	0.0015
	2008	0.0340	0.0015
	2009	0.0339	0.0015
	2010	0.0320	0.0015
	2011	0.0304	0.0015
	2012	0.0313	0.0015
	2013	0.0313	0.0015
	2014	0.0315	0.0015
	2015	0.0332	0.0021
	2016	0.0321	0.0061
	2017	0.0329	0.0084
	2018	0.0326	0.0082
	2019	0.0330	0.0091
	2020	0.0328	0.0098
Gasoline Motorcycles	1960-1995	0.0070	0.0083
	1996-2005	0	0
	2006-2020	0.0070	0.0083

Source: EPA (2022) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020 (Annexes). All values are calculated from Tables A-84 through A-88.

Notes:
Emission factor updates due to a methodology change.
The factors represented in the table above represent combustion emissions only (tank-to-wheel) and do not represent upstream emissions or well-to-wheel emissions.

Table 4 Mobile Combustion CH_4 and N_2O for On-Road Diesel and Alternative Fuel Vehicles

Vehicle Type	Fuel Type	Vehicle Year	CH_4 Factor (g / mile)	N_2O Factor (g / mile)
Passenger Cars	Diesel	1960-1982	0.0006	0.0012
		1983-2006	0.0005	0.0010
		2007-2020	0.0302	0.0192
Light-Duty Trucks	Diesel	1960-1982	0.0011	0.0017
		1983-2006	0.0009	0.0014
		2007-2020	0.0290	0.0214
Medium- and Heavy-Duty Vehicles	Diesel	1960-2006	0.0051	0.0048
		2007-2020	0.0095	0.0431
Light-Duty Cars	Methanol		0.0150	0.0040
	Ethanol		0.0150	0.0040
	CNG		0.1460	0.0040
	LPG		0.0150	0.0040
	Biodiesel		0.0300	0.0190
Light-Duty Trucks	Ethanol		0.0160	0.0050
	CNG		0.1580	0.0050
	LPG		0.0160	0.0050
	LNG		0.1580	0.0050
	Biodiesel		0.0290	0.0210
Medium-Duty Trucks	CNG		1.8290	0.0010
	LPG		0.0090	0.0180
	LNG		1.8290	0.0010
	Biodiesel		0.0090	0.0430
Heavy-Duty Trucks	Methanol		0.0750	0.0280
	Ethanol		0.0750	0.0280
	CNG		0.9210	0
	LPG		0.0030	0.0070
	LNG		0.9210	0
	Biodiesel		0.0090	0.0430
Buses	Methanol		0.1020	0.0470
	Ethanol		0.1020	0.0470
	CNG		2.7870	0.0010
	LPG		0.0100	0.0110
	LNG		2.7870	0.0010
	Biodiesel		0.0090	0.0430

Source: EPA (2022) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020 (Annexes). All values are calculated from Tables A-88 through A-90.
https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

Notes:
Emission factor updates due to a methodology change.
The factors represented in the table above represent combustion emissions only (tank-to-wheel) and do not represent upstream emissions or well-to-wheel emissions.

Table 5 Mobile Combustion CH_4 and N_2O for Non-Road Vehicles

Vehicle Type	Fuel Type	CH_4 Factor (g / gallon)	N_2O Factor (g / gallon)
Ships and Boats	Residual Fuel Oil	1.11	0.32
	Gasoline (2 stroke)	4.61	0.08
	Gasoline (4 stroke)	2.25	0.01
	Diesel	6.41	0.17
Locomotives	Diesel	0.80	0.26
Aircraft	Jet Fuel	0	0.30
	Aviation Gasoline	7.06	0.11
Agricultural Equipment[A]	Gasoline (2 stroke)	6.92	0.47
	Gasoline (4 stroke)	1.93	1.20
	Gasoline Off-Road Trucks	1.93	1.20
	Diesel Equipment	1.27	1.07
	Diesel Off-Road Trucks	0.91	0.56
	LPG	0.33	0.94
Construction/Mining Equipment[B]	Gasoline (2 stroke)	7.98	0.12
	Gasoline (4 stroke)	2.85	1.47
	Gasoline Off-Road Trucks	2.85	1.48
	Diesel Equipment	1.01	0.94
	Diesel Off-Road Trucks	0.91	0.56
	LPG	0.59	0.50
Lawn and Garden Equipment	Gasoline (2 stroke)	7.28	0.31
	Gasoline (4 stroke)	2.99	1.49
	Diesel	0.67	0.49
	LPG	0.41	0.63
Airport Equipment	Gasoline	1.03	1.07
	Diesel	1.88	1.16
	LPG	0.35	0.89
Industrial/Commercial Equipment	Gasoline (2 stroke)	7.12	0.50
	Gasoline (4 stroke)	2.74	1.54
	Diesel	0.41	0.60
	LPG	0.45	0.64
Logging Equipment	Gasoline (2 stroke)	9.68	0
	Gasoline (4 stroke)	3.24	2.05
	Diesel	0.48	1.27
Railroad Equipment	Gasoline	3.24	1.81
	Diesel	0.38	0.95
	LPG	1.99	0.01
Recreational Equipment	Gasoline (2 stroke)	17.61	0.11
	Gasoline (4 stroke)	2.87	1.50
	Diesel	0.73	0.66
	LPG	0.43	0.60

Source: EPA (2022) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020 (Annexes). All values are calculated from Tables A-91 through A-92.
https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

Notes:
Emission factor updates due to a methodology change.
The factors represented in the table above represent combustion emissions only (tank-to-wheel) and do not represent upstream emissions or well-to-wheel emissions.
[A] Includes equipment, such as tractors and combines, as well as fuel consumption from trucks that are used off-road in agriculture.
[B] Includes equipment, such as cranes, dumpers, and excavators, as well as fuel consumption from trucks that are used off-road in construction.

Table 6 Electricity

eGRID Subregion Acronym	eGRID Subregion Name	Total Output Emission Factors			Non-Baseload Emission Factors		
		CO_2 Factor (lb / MWh)	CH_4 Factor (lb / MWh)	N_2O Factor (lb / MWh)	CO_2 Factor (lb / MWh)	CH_4 Factor (lb / MWh)	N_2O Factor (lb / MWh)
AKGD	AKGD (ASCC Alaska Grid)	1,067.7	0.091	0.012	1,229.6	0.120	0.016
AKMS	AKMS (ASCC Miscellaneous)	485.2	0.025	0.004	1,531.3	0.066	0.012
AZNM	AZNM (WECC Southwest)	819.7	0.052	0.007	1,227.6	0.067	0.009
CAMX	CAMX (WECC California)	531.7	0.031	0.004	1,047.5	0.049	0.006
ERCT	ERCT (ERCOT All)	813.6	0.054	0.008	1,177.4	0.065	0.009
FRCC	FRCC (FRCC All)	832.9	0.053	0.007	1,016.5	0.054	0.007
HIMS	HIMS (HICC Miscellaneous)	1,134.4	0.135	0.021	1,649.4	0.176	0.027
HIOA	HIOA (HICC Oahu)	1,633.1	0.176	0.027	1,784.0	0.172	0.027
MROE	MROE (MRO East)	1,582.1	0.148	0.022	1,555.9	0.133	0.019
MROW	MROW (MRO West)	995.8	0.107	0.015	1,808.3	0.183	0.026
NEWE	NEWE (NPCC New England)	539.4	0.072	0.009	900.5	0.073	0.009
NWPP	NWPP (WECC Northwest)	634.6	0.058	0.008	1,545.7	0.139	0.020
NYCW	NYCW (NPCC NYC/Westchester)	816.8	0.019	0.002	930.8	0.020	0.002
NYLI	NYLI (NPCC Long Island)	1,210.9	0.126	0.016	1,317.3	0.040	0.005
NYUP	NYUP (NPCC Upstate NY)	233.1	0.015	0.002	880.7	0.047	0.006
PRMS	PRMS (Puerto Rico Miscellaneous)	1,558.0	0.081	0.013	1,618.1	0.060	0.011
RFCE	RFCE (RFC East)	672.8	0.049	0.007	1,357.3	0.106	0.015
RFCM	RFCM (RFC Michigan)	1,214.1	0.115	0.016	1,717.0	0.160	0.023
RFCW	RFCW (RFC West)	1,046.1	0.095	0.014	1,798.8	0.172	0.025
RMPA	RMPA (WECC Rockies)	1,158.9	0.109	0.016	1,614.2	0.128	0.018
SPNO	SPNO (SPP North)	991.7	0.108	0.016	1,926.2	0.204	0.029
SPSO	SPSO (SPP South)	1,031.6	0.080	0.012	1,584.6	0.116	0.017
SRMV	SRMV (SERC Mississippi Valley)	772.7	0.040	0.006	1,177.0	0.066	0.009
SRMW	SRMW (SERC Midwest)	1,543.0	0.171	0.025	1,763.2	0.179	0.026
SRSO	SRSO (SERC South)	891.9	0.067	0.010	1,384.6	0.101	0.015
SRTV	SRTV (SERC Tennessee Valley)	931.6	0.087	0.013	1,636.2	0.151	0.022
SRVC	SRVC (SERC Virginia/Carolina)	639.7	0.052	0.007	1,357.0	0.116	0.016
US Average	US Average	852.3	0.071	0.010	1,410.0	0.110	0.016

Source: EPA eGRID2021, February 2023 (Table 1. Subregion Output Emission Rates)
https://www.epa.gov/egrid/download-data

Notes:
Total output emission factors can be used as default factors for estimating GHG emissions from electricity use when developing a carbon footprint or emissions inventory. Annual non-baseload output emission factors should not be used when developing a carbon footprint or emissions inventory, but can be used to estimate GHG emissions reductions on the grid from changes in electricity use.
For technical information, reference the EPA's eGRID Technical Guide

https://www.epa.gov/system/files/documents/2023-01/eGRID2021_technical_guide.pdf

The factors represented in the table above represent combustion emissions only (tank-to-wheel) and do not represent upstream emissions or well-to-wheel emissions.

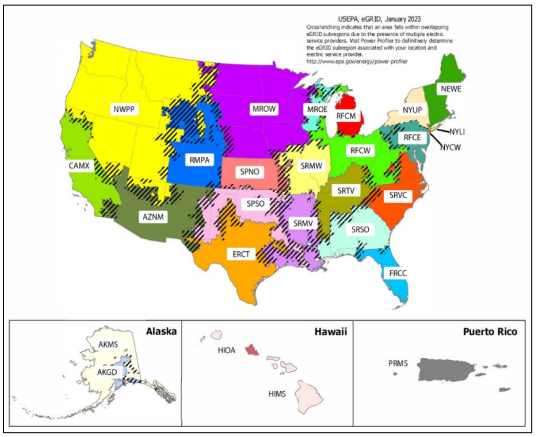

Table 7 Steam and Heat

	CO_2 Factor (kg / mmBtu)	CH_4 Factor (g / mmBtu)	N_2O Factor (g / mmBtu)
Steam and Heat	66.33	1.250	0.125

Notes:
Emission factors are per mmBtu of steam or heat purchased. These factors assume natural gas fuel is used to generate steam or heat at 80 percent thermal efficiency.
The factors represented in the table above represent combustion emissions only (tank-to-wheel) and do not represent upstream emissions or well-to-wheel emissions.

Scope 3 Emission Factors

Scope 3 emission factors provided below are aligned with the Greenhouse Gas Protocol Technical Guidance for Calculating Scope 3 Emissions, version 1.0 (Scope 3 Calculation Guidance). Where applicable, the specific calculation method is referenced. Refer to the Scope 3 Calculation Guidance for more information (http://www.ghgprotocol.org/scope-3-technical-calculation-guidance)

Table 8 Scope 3 Category 4: Upstream Transportation and Distribution and Category 9: Downstream Transportation and Distribution

These factors are intended for use in the distance-based method defined in the Scope 3 Calculation Guidance. If fuel data are available, then the fuel-based method should be used, with factors from Tables 2 through 5.

Vehicle Type	CO_2 Factor (kg / unit)	CH_4 Factor (g / unit)	N_2O Factor (g / unit)	Units
Medium- and Heavy-Duty Truck	1.387	0.013	0.038	vehicle-mile
Passenger Car [A]	0.313	0.008	0.007	vehicle-mile
Light-Duty Truck [B]	0.467	0.013	0.012	vehicle-mile
Medium- and Heavy-Duty Truck[C]	0.170	0.0016	0.0047	ton-mile
Rail	0.021	0.0016	0.0005	ton-mile
Waterborne Craft	0.044	0.0254	0.0011	ton-mile
Aircraft	0.698	0	0.0215	ton-mile

Source:
CO_2, CH_4, and N_2O emissions data for road vehicles are from Table 2-13 of the EPA (2022) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020.
Vehicle-miles and passenger-miles data for road vehicles are from Table VM-1 of the Federal Highway Administration Highway Statistics 2020.
CO_2e emissions data for non-road vehicles are based on Table A-107 of the EPA (2022) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020, which are distributed into CO_2, CH_4, and N_2O emissions based on fuel/vehicle emission factors.
Freight ton-mile data are from Table 1-50 of the Bureau of Transportation Statistics, National Transportation Statistics for 2021 (2020 data).

Notes:
Vehicle-mile factors are appropriate to use when the entire vehicle is dedicated to transporting the reporting company's product. Ton-mile factors are appropriate when the vehicle is shared with products from other companies.
The factors represented in the table above represent combustion emissions only (tank-to-wheel) and do not represent upstream emissions or well-to-wheel emissions.
[A] Passenger car: includes passenger cars, minivans, SUVs, and small pickup trucks (vehicles with wheelbase less than 121 inches).
[B] Light-duty truck: includes full-size pickup trucks, full-size vans, and extended-length SUVs (vehicles with wheelbase greater than 121 inches).
[C] Medium- and Heavy-Duty Truck: includes Combination Trucks and single frame trucks that have 2-Axles and at least 6 tires or a gross vehicle weight rating exceeding 10,000 lbs.

Table 9 Scope 3 Category 5: Waste Generated in Operations and Category 12: End-of-Life Treatment of Sold Products

These factors are intended for use in the waste-type-specific method or the average-data method defined in the Scope 3 Calculation Guidance for category 5 and category 12. Choose the appropriate material and disposal method from the table below. For the average-data method, use one of the mixed material types, such as mixed MSW.

	Metric Tons CO_2e / Short Ton Material					
Material	**Recycled[A]**	**Landfilled[B]**	**Combusted[C]**	**Composted[D]**	**Anaerobically Digested (Dry Digestate with Curing)**	**Anaerobically Digested (Wet Digestate with Curing)**
Aluminum Cans	0.06	0.02	0.01	NA	NA	NA
Aluminum Ingot	0.04	0.02	0.01	NA	NA	NA
Steel Cans	0.32	0.02	0.01	NA	NA	NA
Copper Wire	0.18	0.02	0.01	NA	NA	NA
Glass	0.05	0.02	0.01	NA	NA	NA
HDPE	0.21	0.02	2.80	NA	NA	NA
LDPE	NA	0.02	2.80	NA	NA	NA
PET	0.23	0.02	2.05	NA	NA	NA
LLDPE	NA	0.02	2.80	NA	NA	NA
PP	NA	0.02	2.80	NA	NA	NA
PS	NA	0.02	3.02	NA	NA	NA
PVC	NA	0.02	1.26	NA	NA	NA
PLA	NA	0.02	0.01	0.17	NA	NA
Corrugated Containers	0.11	0.90	0.05	NA	NA	NA
Magazines/Third-class mail	0.02	0.42	0.05	NA	NA	NA
Newspaper	0.02	0.35	0.05	NA	NA	NA
Office Paper	0.02	1.25	0.05	NA	NA	NA
Phonebooks	0.04	0.35	0.05	NA	NA	NA
Textbooks	0.04	1.25	0.05	NA	NA	NA
Dimensional Lumber	0.09	0.17	0.05	NA	NA	NA
Medium-density Fiberboard	0.15	0.07	0.05	NA	NA	NA
Food Waste (non-meat)	NA	0.58	0.05	0.15	0.14	0.11
Food Waste (meat only)	NA	0.58	0.05	NA	0.14	0.11
Beef	NA	0.58	0.05	0.15	0.14	0.11
Poultry	NA	0.58	0.05	0.15	0.14	0.11
Grains	NA	0.58	0.05	0.15	0.14	0.11
Bread	NA	0.58	0.05	0.15	0.14	0.11
Fruits and Vegetables	NA	0.58	0.05	0.15	0.14	0.11
Dairy Products	NA	0.58	0.05	0.15	0.14	0.11
Yard Trimmings	NA	0.33	0.05	0.19	0.11	NA
Grass	NA	0.26	0.05	0.19	0.09	NA
Leaves	NA	0.26	0.05	0.19	0.13	NA
Branches	NA	0.53	0.05	0.19	0.16	NA
Mixed Paper (general)	0.07	0.80	0.05	NA	NA	NA
Mixed Paper (primarily residential)	0.07	0.77	0.05	NA	NA	NA
Mixed Paper (primarily from offices)	0.03	0.75	0.05	NA	NA	NA
Mixed Metals	0.23	0.02	0.01	NA	NA	NA
Mixed Plastics	0.22	0.02	2.34	NA	NA	NA
Mixed Recyclables	0.09	0.68	0.11	NA	NA	NA
Food Waste	NA	0.58	0.05	0.15	NA	NA
Mixed Organics	NA	0.48	0.05	0.17	NA	NA
Mixed MSW	NA	0.52	0.43	NA	NA	NA
Carpet	NA	0.02	1.68	NA	NA	NA
Desktop CPUs	NA	0.02	0.40	NA	NA	NA
Portable Electronic Devices	NA	0.02	0.89	NA	NA	NA
Flat-panel Displays	NA	0.02	0.74	NA	NA	NA
CRT Displays	NA	0.02	0.64	NA	NA	NA
Electronic Peripherals	NA	0.02	2.23	NA	NA	NA
Hard-copy Devices	NA	0.02	1.92	NA	NA	NA
Mixed Electronics	NA	0.02	0.87	NA	NA	NA
Clay Bricks	NA	0.02	NA	NA	NA	NA
Concrete	0.01	0.02	NA	NA	NA	NA
Fly Ash	0.01	0.02	NA	NA	NA	NA
Tires	0.10	0.02	2.21	NA	NA	NA
Asphalt Concrete	0	0.02	NA	NA	NA	NA
Asphalt Shingles	0.03	0.02	0.70	NA	NA	NA
Drywall	NA	0.02	NA	NA	NA	NA
Fiberglass Insulation	0.05	0.02	NA	NA	NA	NA
Vinyl Flooring	NA	0.02	0.29	NA	NA	NA
Wood Flooring	NA	0.18	0.08	NA	NA	NA

Source: EPA, Office of Resource Conservation and Recovery (February 2016) Documentation for Greenhouse Gas Emission and Energy Factors used in the Waste Reduction Model (WARM). Factors from tables provided in the Management Practices Chapters and Background Chapters. WARM Version 15, November 2020 Update. Additional data provided by EPA, WARM-15 Background Data.

Notes: These factors do not include any avoided emissions impact from any of the disposal methods. All the factors presented here include transportation emissions, which are optional in the Scope 3 Calculation Guidance, with an assumed average distance traveled to the processing facility. AR4 GWPs are used to convert all waste emission factors into CO_2e.

[A] Recycling emissions include transport to recycling facility and sorting of recycled materials at material recovery facility.

[B] Landfilling emissions include transport to landfill, equipment use at landfill and fugitive landfill CH_4 emissions. Landfill CH_4 is based on typical landfill gas collection practices and average landfill moisture conditions.

[C] Combustion emissions include transport to combustion facility and combustion-related non-biogenic CO_2 and N_2O

[D] Composting emissions include transport to composting facility, equipment use at composting facility and CH_4 and N_2O emissions during composting.

Table 10 Scope 3 Category 6: Business Travel and Category 7: Employee Commuting

These factors are intended for use in the distance-based method defined in the Scope 3 Calculation Guidance. If fuel data are available, then the fuel-based method should be used, with factors from Tables 2 through 5.

Vehicle Type	CO_2 Factor (kg / unit)	CH_4 Factor (g / unit)	N_2O Factor (g / unit)	Units
Passenger Car [A]	0.313	0.008	0.007	vehicle-mile
Light-Duty Truck [B]	0.467	0.013	0.012	vehicle-mile
Motorcycle	0.178	0.111	0.019	vehicle-mile
Intercity Rail - Northeast Corridor [C]	0.058	0.0055	0.0007	passenger-mile
Intercity Rail - Other Routes [C]	0.150	0.0117	0.0038	passenger-mile
Intercity Rail - National Average [C]	0.113	0.0092	0.0026	passenger-mile
Commuter Rail [D]	0.135	0.0109	0.0027	passenger-mile
Transit Rail (i.e. Subway, Tram) [E]	0.096	0.0080	0.0011	passenger-mile
Bus	0.055	0.0063	0.0011	passenger-mile
Air Travel - Short Haul (< 300 miles)	0.207	0.0064	0.0066	passenger-mile
Air Travel - Medium Haul (>= 300 miles, < 2300 miles)	0.129	0.0006	0.0041	passenger-mile
Air Travel - Long Haul (>= 2300 miles)	0.163	0.0006	0.0052	passenger-mile

Source:
CO_2, CH_4, and N_2O emissions data for highway vehicles are from Table 2-13 of the EPA (2022) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2020.
Vehicle-miles and passenger-miles data for highway vehicles are from Table VM-1 of the Federal Highway Administration Highway Statistics 2020.
Fuel consumption data and passenger-miles data for rail are from Tables A.14 to A.16 and C.9 to C.11 of the Transportation Energy Data Book: Edition 40. Fuel consumption was converted to emissions by using fuel and electricity emission factors presented in the tables above.
Intercity Rail factors from communication with Amtrak, March 2020. These are based on 2019 values.
Air Travel factors from 2022 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting. Version 2.0 June 2022.

Notes:
The factors represented in the table above represent combustion emissions only (tank-to-wheel) and do not represent upstream emissions or well-to-wheel emissions.
CH_4 and N_2O emission factor updates for motorcycle and bus due to a methodology change.

[A] Passenger car: includes passenger cars, minivans, SUVs, and small pickup trucks (vehicles with wheelbase less than 121 inches).

[B] Light-duty truck: includes full-size pickup trucks, full-size vans, and extended-length SUVs (vehicles with wheelbase greater than 121 inches).

[C] Intercity rail: Amtrak long-distance rail between major cities. Northeast Corridor extends from Boston to Washington D.C. Other Routes are all routes outside the Northeast Corridor.

[D] Commuter rail: rail service between a central city and adjacent suburbs (also called regional rail or suburban rail).

[E] Transit rail: rail typically within an urban center, such as subways, elevated railways, metropolitan railways (metro), streetcars, trolley cars, and tramways.

Global Warming Potentials

Table 11 Global Warming Potentials (GWPs)

Gas	100-Year GWP
CO_2	1
CH_4	25
N_2O	298
HFC-23	14,800
HFC-32	675
HFC-41	92
HFC-125	3,500
HFC-134	1,100
HFC-134a	1,430
HFC-143	353
HFC-143a	4,470
HFC-152	53
HFC-152a	124
HFC-161	12
HFC-227ea	3,220
HFC-236cb	1,340
HFC-236ea	1,370
HFC-236fa	9,810
HFC-245ca	693
HFC-245fa	1,030
HFC-365mfc	794
HFC-43-10mee	1,640
SF_6	22,800
NF_3	17,200
CF_4	7,390
C_2F_6	12,200
C_3F_8	8,830
c-C_4F_8	10,300
C_4F_{10}	8,860
C_5F_{12}	9,160
C_6F_{14}	9,300
$C_{10}F_{18}$	>7,500

Source:
100-year GWPs from IPCC Fourth Assessment Report (AR4), 2007. IPCC AR4 was published in 2007 and is among the most current and comprehensive peer-reviewed assessments of climate change. AR4 provides revised GWPs of several GHGs relative to the values provided in previous assessment reports, following advances in scientific knowledge on the radiative efficiencies and atmospheric lifetimes of these GHGs and of CO2.

Factors in the 2023 Emission Factors update are based on AR4 GWPs, but EPA recognizes that Fifth Assessment Report (AR5) GWPs have been published and used in the Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021 report (published February 2023). However, this 2023 Emission Factors Hub and the GHG Reporting Program continue to use AR4 GWPs. EPA plans to incorporate AR5 GWPs into the 2024 Emission Factors Hub update.

Table 12 Global Warming Potentials (GWPs) for Blended Refrigerants

ASHRAE #	100-year GWP	Blend Composition
R-401A	16	53% HCFC-22 , 34% HCFC-124 , 13% HFC-152a
R-401B	14	61% HCFC-22 , 28% HCFC-124 , 11% HFC-152a
R-401C	19	33% HCFC-22 , 52% HCFC-124 , 15% HFC-152a
R-402A	2,100	38% HCFC-22 , 6% HFC-125 , 2% propane
R-402B	1,330	60% HCFC-22 , 38% HFC-125 , 2% propane
R-403B	3,444	56% HCFC-22 , 39% PFC-218 , 5% propane
R-404A	3,922	44% HFC-125 , 4% HFC-134a , 52% HFC 143a
R-406A	0	55% HCFC-22 , 41% HCFC-142b , 4% isobutane
R-407A	2,107	20% HFC-32 , 40% HFC-125 , 40% HFC-134a
R-407B	2,804	10% HFC-32 , 70% HFC-125 , 20% HFC-134a
R-407C	1,774	23% HFC-32 , 25% HFC-125 , 52% HFC-134a
R-407D	1,627	15% HFC-32 , 15% HFC-125 , 70% HFC-134a
R-407E	1,552	25% HFC-32 , 15% HFC-125 , 60% HFC-134a
R-408A	2,301	47% HCFC-22 , 7% HFC-125 , 46% HFC 143a
R-409A	0	60% HCFC-22 , 25% HCFC-124 , 15% HCFC-142b
R-410A	2,088	50% HFC-32 , 50% HFC-125
R-410B	2,229	45% HFC-32 , 55% HFC-125
R-411A	14	87.5% HCFC-22 , 11 HFC-152a , 1.5% propylene
R-411B	4	94% HCFC-22 , 3% HFC-152a , 3% propylene
R-413A	2,053	88% HFC-134a , 9% PFC-218 , 3% isobutane
R-414A	0	51% HCFC-22 , 28.5% HCFC-124 , 16.5% HCFC-142b
R-414B	0	5% HCFC-22 , 39% HCFC-124 , 9.5% HCFC-142b
R-417A	2,346	46.6% HFC-125 , 5% HFC-134a , 3.4% butane
R-422A	3,143	85.1% HFC-125 , 11.5% HFC-134a , 3.4% isobutane
R-422D	2,729	65.1% HFC-125 , 31.5% HFC-134a , 3.4% isobutane
R-423A	2,280	47.5% HFC-227ea , 52.5% HFC-134a
R-424A	2,440	50.5% HFC-125 , 47% HFC-134a , 2.5% butane/pentane
R-426A	1,508	5.1% HFC-125 , 93% HFC-134a , 1.9% butane/pentane
R-428A	3,607	77.5% HFC-125 , 2% HFC-143a , 1.9% isobutane
R-434A	3,245	63.2% HFC-125 , 16% HFC-134a , 18% HFC-143a , 2.8% isobutane
R-500	32	73.8% CFC-12 , 26.2% HFC-152a , 48.8% HCFC-22
R-502	0	48.8% HCFC-22 , 51.2% CFC-115
R-504	325	48.2% HFC-32 , 51.8% CFC-115
R-507	3,985	5% HFC-125 , 5% HFC143a
R-508A	13,214	39% HFC-23 , 61% PFC-116
R-508B	13,396	46% HFC-23 , 54% PFC-116

Source:
100-year GWPs from IPCC Fourth Assessment Report (AR4), 2007. See the source note to Table 11 for further explanation. GWPs of blended refrigerants are based on their HFC and PFC constituents, which are based on data from http://www.epa.gov/ozone/snap/refrigerants/refblend.html.

States of California, Connecticut, Delaware, Illinois, Maryland, Michigan, Minnesota, New Jersey, New Mexico, New York, Oregon, Rhode Island, and Wisconsin; Commonwealths of Massachusetts and Pennsylvania; and District of Columbia

April 24, 2023

Via electronic submission to www.regulations.gov

Chair Lina M. Khan
Federal Trade Commission
Office of the Secretary
600 Pennsylvania Avenue NW, Suite CC–5610 (Annex J)
Washington, DC 20580

Re: Green Guides Review, Matter No. P954501

Dear Chair Khan:

The undersigned State Attorneys General (collectively "States") respectfully submit these comments in connection with the Federal Trade Commission's decennial regulatory review of the FTC's Guides for the Use of Environmental Marketing Claims ("Green Guides" or "Guides").[1]

The FTC first issued the Green Guides in 1992 (57 Fed. Reg. 36,363 (Aug. 13, 1992)), driven in part by recommendations from a Task Force of various state Attorneys General. In a pair of "Green Reports" issued in 1990 and 1991, the Task Force noted the need for "uniform national standards for environmental advertising" and proposed "federal definitions" for terms such as "compostable," "degradable," and "recyclable."[2]

The stated purpose of the Green Guides is to "help marketers avoid deceptive environmental claims under Section 5 of the Federal Trade Commission Act (FTCA), 15 U.S.C. 45."[3] The Guides have come to play an important role in establishing the bounds of such claims. Indeed, as our States endeavor to address critical environmental issues—climate change, the pollution of our air and water, emerging contaminants, and solid waste disposal, among so many others—the value of baseline standards for evaluating whether environmental marketing or promotional

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[1] 87 Fed. Reg. 77,766 (Dec. 20, 2022).
[2] THE GREEN REPORT: FINDINGS AND PRELIMINARY RECOMMENDATIONS FOR RESPONSIBLE ENVIRONMENTAL ADVERTISING (1990), https://p2infohouse.org/ref/24/23677.pdf; THE GREEN REPORT II: RECOMMENDATIONS FOR RESPONSIBLE ENVIRONMENTAL ADVERTISING vi (1991) (hereinafter, "Green Report II"). (This report, and other documents where indicated below, are submitted herewith for inclusion in the record.)
[3] F.T.C., The Green Guides, Statement of Basis and Purpose 1 (Oct. 1, 2012), https://www.ftc.gov/sites/default/files/attachments/press-releases/ftc-issues-revised-green-guides/greenguidesstatement.pdf [hereinafter FTC Statement].

claims are deceptive and thus potentially unlawful under consumer protection laws cannot be overstated. Our efforts are wholly undermined by such unscrupulous environmental marketing.

Further, as detailed below, many of our States have incorporated the Green Guides by reference into various state laws, and in several instances, courts have looked to the Green Guides in legal actions attempting to hold manufacturers accountable for deceiving consumers into purchasing "green" products they would not have otherwise purchased. It is well documented that many consumers actively look to purchase environmentally friendly products.[4] The States thus have a significant interest in ensuring the Green Guides provide clear guidance on the meaning of environmental marketing claims—for the benefit of our *consumers*, who may never read the Green Guides themselves.

The States specifically wish to comment on the following topics and claims:

Part A: General Issues and Principles
Part B: Specific Claims:

1. Carbon Offsets, § 260.5
2. Other Climate Change-Related Claims, § 260.5
3. Compostable Claims, § 260.7
4. Recyclable Claims, § 260.12
5. Renewable Energy Claims, § 260.15

The fact that the States are not commenting on other aspects of the Green Guides should not be taken as satisfaction with the status quo. In general, we support any revisions to the Green Guides that serve to (1) clarify and strengthen the standards for all environmental marketing claims addressed by the Green Guides, and (2) expand the scope of the guidance, both by addressing other specific claims and also by strengthening the general principles, to ensure coverage of *any* marketing claim that seeks to induce consumers by promising that a product will do less harm to, or even benefit, the environment.

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[4] *See*, *e.g.*, ECONOMIST INTELLIGENCE UNIT, AN ECO-WAKENING: MEASURING GLOBAL AWARENESS, ENGAGEMENT AND ACTION FOR NATURE 22 (2020), https://impact.economist.com/perspectives/sites/default/files/an_ecowakening_measuring_awareness_engagement_and_action_for_nature_final_may_18_2021.pdf ("The popularity of Google searches for sustainable goods increased by 71% between 2016 and 2020.").

A. GENERAL ISSUES AND PRINCIPLES

In this part, we address some of the "General Issues" that the FTC identified in its request for comments and also a few of the "General Principles" in the existing Guides.

General Issues

Question No. 1: Is there a continuing need for the Guides? Why or why not?

The States strongly support maintaining and strengthening the Green Guides, consistent with these comments. The Green Guides are an important tool in public and private efforts to address critical environmental issues by helping to ensure that consumers are not misled in making purchasing decisions on the basis of the environmental benefits of those products and services. We thus urge the FTC to revise the Green Guides as necessary to clarify and strengthen the standards set forth therein.

All 50 states and the District of Columbia have laws prohibiting unfair or deceptive practices, which public enforcers and private plaintiffs alike have used to hold marketers accountable for "greenwashing" their products with unsubstantiated claims of environmental benefits. Several states also have laws that specifically regulate environmental marketing claims, and 36 states, including most of the undersigned, either directly incorporate the Green Guides into state law by reference, or otherwise reference the standards set forth in the Green Guides in some way. According to data provided by a recent report, those references fall into one of four categories:[5]

1. Laws that directly incorporate the standards set forth in the Green Guides as the legal standard for lawfully making certain marketing claims.[6] (13 states/territories)

[5] CONNOR J. FRASER, STATE ENERGY & ENV'T IMPACT CTR., N.Y.U., WHAT'S IN A LABEL? THE FTC'S GREEN GUIDES IN CONTEXT 4-5 (2023), https://stateimpactcenter.org/files/Whats-in-a-Label-The-FTC-Green-Guides-Issue-Brief.pdf (submitted herewith).

[6] *See*, *e.g.*, CAL. BUS. & PROF. CODE § 17580.5(a) (West 2023) (prohibiting any "untruthful, deceptive, or misleading environmental marketing claim," which is defined to include any claim contained in the Green Guides); CAL. PUB. RES. CODE § 42281(a)(6) (West 2023) (providing that if a producer of reusable grocery bags claims that the bag is "recyclable," such claim must "[c]ompl[y] with [the Green Guides] related to recyclable claims."); N.Y. COMP. CODES R. & REGS. tit. 6, § 368-1.3(a) (2022) ("A person may only use the term 'recyclable' on a product or package that is in conformance" with the Green Guides.); ALA. CODE § 22-27A-1 (2021) ("No person shall distribute, sell, or offer for sale any rigid plastic container, including a plastic beverage container, labeled 'degradable,' 'biodegradable,' 'compostable,' or any other word suggesting the container will biodegrade, unless it [complies with the Green Guides]. . . .").

2. Laws providing that the FTC's interpretation of Section 5 of the FTCA should guide or govern how courts construe a particular consumer protection law. These laws essentially treat the Green Guides as persuasive authority.[7] (27 states/territories)
3. Laws that incorporate the FTC's Section 5 regulations or guidance as the "floor" for state regulations.[8] (12 states/territories)
4. Laws that reference the FTC's rules, regulations, and guidance under FTCA Section 5 (which includes the Green Guides) as the standard that would provide a defense against state consumer protection claims.[9] (14 states/territories)

The Green Guides thus often serve as either a legal standard for determining liability under state law or a persuasive metric for evaluating whether a claim is otherwise objectively "deceptive" or unfair under state law. Thus, the Green Guides play an important role in efforts to inform consumers about the environmental attributes of the products and services they purchase and to protect them from being deceived into making purchases that do not align with their purchasing goals.

The FTC can take action under Section 5 of the FTCA to prosecute unfair or deceptive marketing practices, which may be established where a marketer makes an environmental claim that is inconsistent with the Guides.[10] States are also taking up the charge: For example, in a matter detailed below (*see infra* Section B.5), the Massachusetts Attorney General relied on § 260.15(b) of the Green Guides to contend that a natural gas distributor's claim that its gas was "renewable" constituted unfair and deceptive marketing practices under the Massachusetts consumer protection laws. In a similar matter pending in California, a company sought to induce consumption of its product—or at least assuage educated consumers' concerns that the product was harmful—by claiming that the product was "renewable." Relying on the Green Guides' criteria to evaluate the claim, the California Attorney General determined that the company's claims were unlawful under state law (which incorporated the Green Guides by reference). The company stopped making the claim, and consumers will no longer be induced by a misleading claim to purchase the product.

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[7] *See*, *e.g.*, MASS. GEN. LAWS ch. 93A, § 2(b) (2023) (in applying specified laws, "the courts will be guided by the interpretations given by the Federal Trade Commission and the Federal Courts to section 5(a)(1) of the Federal Trade Commission Act (15 U.S.C. 45(a)(1))"); CONN. GEN. STAT. ANN. § 42-110b(b) (West 2023).
[8] *See*, *e.g.*, FLA. STAT. ANN. §§ 501.201, 501.205 (West 2023) ("All substantive rules promulgated under this part [of the Florida's Deceptive and Unfair Trade Practices Act] must not be inconsistent with the rules, regulations, and decisions of the Federal Trade Commission and the federal courts in interpreting the provisions of [FTCA Section 5].").
[9] *See*, *e.g.*, CAL. BUS. & PROF. CODE § 17580.5 (West 2023) ("It shall be a defense to any suit or complaint brought under this section that the person's environmental marketing claims conform to the standards or are consistent with the examples contained in the [Green Guides]".).
[10] Cases listed at https://www.ftc.gov/news-events/topics/truth-advertising/green-guides.

In another matter, relying on both the Green Guides and state law, the Connecticut Attorney General sued Reynolds Consumer Products, Inc. in July 2022, alleging the company falsely and deceptively marketed Hefty "Recycling Bags" as recyclable despite full knowledge that the bags are incompatible with recycling facilities in Connecticut.[11] Addressing a similar issue in a pending investigation, the California Attorney General cited the Green Guides in letters sent to several manufacturers of reusable plastic grocery bags in November 2022, demanding that they substantiate their claims that the bags they offer for sale are "recyclable in the state," as required by state law.[12]

Private consumer litigants have also endeavored to hold marketers accountable for deceptive marketing claims under state consumer protection laws. As illustrated by the following cases, the Green Guides often come into play, with varying results:

- *Bush v. Rust-Oleum Corp.*: Plaintiff alleged that the labeling of cleaning products as "non-toxic" and "earth friendly" was misleading due to the fact that the products can cause harm to humans, animals, and the environment, in violation of California consumer-protection laws.[13] Plaintiff cited the Green Guides, which state that, "[a] non-toxic claim likely conveys that a product, package, or service is non-toxic both for humans and for the environment generally," and "Non-toxic claims should be clearly and prominently qualified to the extent necessary to avoid deception."[14] The court denied Defendant's motion to dismiss, reasoning that the Plaintiff plausibly pleaded that a reasonable consumer is likely to be deceived by the labels.[15]

- *White v. Kroger Co.*: Plaintiff alleged that sunscreen products were misleadingly labeled as "reef friendly" due to the fact that they contain ingredients with the potential to damage reefs.[16] The court reasoned that the Green Guides, along with California statute Cal. Bus. & Prof. Code § 17580.5, which essentially codifies the Green Guides, undermine Defendant's argument that the claims should be dismissed as "mere puffery."[17] While the Green Guides do not specifically discuss the term "reef friendly," the court highlighted that the Guides state, "[u]nqualified general environmental benefit claims ... likely convey that the product ... has specific and far-reaching environmental benefits and may convey

[11] *State of Connecticut v. Reynolds Consumer Prods., Inc.*, No. HHD-CV22-6156769-S (July 12, 2022) (complaint submitted herewith).
[12] *See*, *e.g.*, Letter from Cal. Att'y Gen. Rob Bonta to Michael Mettler, CEO of Papier-Mettler (Nov. 2, 2022) (submitted herewith).
[13] Bush v. Rust-Oleum Corp., No. 20-CV-03268-LB, 2021 WL 24842 (N.D. Cal. Jan. 4, 2021).
[14] *Id.* at *2.
[15] *Id*. at *6.
[16] White v. Kroger Co., No. 21-CV-08004-RS, 2022 WL 888657 (N.D. Cal. Mar. 25, 2022).
[17] *Id*. at *2.

that the item ... has no negative environmental impact."[18] It goes on to list the term "eco-friendly" as an example.[19] The court reasoned that while the Guides and the statute do not create a private cause of action, they show that terms such as "reef friendly" should not be dismissed as mere puffery.[20] The court therefore denied Defendant's motion to dismiss.[21]

- *Swartz v. Coca-Cola Co.*: Plaintiffs alleged it was misleading to claim that Coca-Cola's plastic bottles were "100% recyclable" when, in fact, most bottles are not recycled.[22] In granting defendant's motion to dismiss, the court found that Plaintiffs' interpretation of "recyclable" as "guarantee[ing]" the bottle would be recycled was inconsistent with the Green Guides.[23] The court stated, "whether a product is properly labeled 'recyclable' under the Green Guides depends on whether it is comprised of materials that can be recycled by existing recycling programs—not, as plaintiffs say, on whether the product is converted into reusable material."[24] Ultimately, the court concluded it was not deceptive for Coca-Cola to market the bottle as "recyclable" so long as the bottle (together with its cap and label) was *capable* of being recycled.[25] For reasons set forth below, we disagree with this analysis, but the case nonetheless exemplifies the role the Green Guides play in public and private efforts to ensure that environmental marketing statements are aligned with consumer expectations. Following the court's order granting Defendant's motion to dismiss, Plaintiffs filed an amended complaint on December 9, 2022. A motion to dismiss was heard March 9, 2023; the court's ruling on that motion is pending.

Question No. 2: **What benefits have the Guides provided to consumers? What evidence supports the asserted benefits?**

By reflecting what consumers think common environmental marketing claims mean, the standards set forth in the Green Guides ensure that marketers do not deceive or mislead the public when they apply those claims to products and services that do not meet those standards. As a result, consumers can have some degree of confidence that a claim means what they think it means, and make their decision whether to purchase the product accordingly. Stated otherwise, the Green Guides inform application of consumer protection laws, which—as the term implies—

[18] *Id*., citing 16 C.F.R. § 260.4(b) (2022).
[19] *Id*.
[20] *Id.* at *2.
[21] *Id*. at *3.
[22] Swartz v. Coca-Cola Co., No. 21-CV-04643-JD, 2022 WL 17881771 (N.D. Cal. Nov. 18, 2022).
[23] *Id.* at *1-2.
[24] *Id*. at *2.
[25] *Id.*

are designed to protect consumers. This is true regardless of the fact that most consumers have never heard of the Green Guides, and as one court dismissively noted, few will ever read them.[26]

Question No. 13(b): To what extent have the Guides reduced marketers' uncertainty about which claims might lead to FTC law enforcement actions? Please provide any supporting evidence. Does this evidence indicate the Guides should be modified? If so, why, and how? If not, why not?

Question No. 17: **Do the Guides overlap or conflict with other federal, state, or local laws or regulations? If so, how?**

The following comment touches on both of those questions in part:

As the Green Guides already note, the standards set forth therein do not "preempt federal, state, or local laws."[27] That provision further states that "[c]ompliance with those laws, however, will not necessarily preclude Commission law enforcement action under the FTC Act."[28] We believe it is imperative that the Guides continue to emphasize, in this and other ways, that the standards set forth in the Guides are a *floor*, not a ceiling, and that marketers must comply with more rigorous standards where those standards apply.

Separate but related, it is important that the Guides also make clear that compliance with the Guides is not a "safe harbor" from liability under those more rigorous standards, or from liability for deception generally. The FTC should make clear that it retains its authority under Section 5 of the FTCA to impose liability for environmental marketing claims that are false or misleading under the circumstances, even where those claims are made in accordance with the Guides or an example therein.

General Principles

We urge the FTC to modify the "General Principles" of the Green Guides to better serve the Guides' purpose. The General Principles should set a clearer baseline for all environmental marketing claims, currently defined as "claims about the environmental attributes of a product, package, or service in connection with the marketing, offering for sale, or sale of such item or

[26] *See* Curtis v. 7-Eleven, Inc., No. 21-CV-6079, 2022 WL 4182384, at *16 (N.D. Ill. Sept. 13, 2022) ("It is not clear how useful those Green Guides are when evaluating the views of a reasonable consumer at a convenience store. Your average consumer at 7-Eleven probably doesn't have the FTC's policy statements at his or her fingertips when picking up a bag of foam plates for the backyard BBQ.").
[27] 16 C.F.R. § 260.1(b) (2023) ("Purpose, Scope, and Structure of the Guides").
[28] *Id*.

service to individuals."[29] This includes environmental marketing claims that are specifically addressed by the Guides, such as those discussed below in Section B, and all other claims purporting environmental benefits.

As a general principle to discourage "overstating" an environmental attribute, the Green Guides instruct that "[m]arketers should not state or imply environmental benefits if the benefits are negligible." 16 C.F.R. § 260.3(c). Taking this principle a step further, the Guides should expressly state that *any* environmental marketing claim must be underwritten or supported by an *actual or demonstrable environmental benefit relevant to [or consistent with] the claim* to avoid being deceptive. (The clause "relevant to the claim" is important for when the product might have multiple environmental benefits.)

Such an express threshold principle would not only provide guidance for environmental marketing claims that are not specifically addressed by the Guides, but would also help to clarify the meaning of claims that are. For example, despite FTC's clear intention to the contrary, a few courts have agreed with marketers that "recyclable" means only that the item is technically capable of being recycled, regardless of whether a consumer can actually cause the item to be recycled as a practical matter.[30] By making explicit that any environmental marketing claim must be underwritten by an actual environmental benefit, the Green Guides would foreclose such conclusions; when an item that is technically capable of being recycled is not *actually* recycled—even if the consumer properly disposes of it—that item has no environmental benefit over a similar item made with non-recyclable material.

In keeping with that general principle, below we propose ways in which the Green Guides should be revised to ensure that certain environmental marketing claims are more reliably underwritten by actual environmental benefits relative to products and services that do not make such claims.

B. SPECIFIC CLAIMS

Here, we focus on several environmental marketing claims specifically addressed in the Green Guides that are central to our States' work to address pressing environmental issues such as climate change and solid waste management. Those claims include (1) carbon offsets, (2) other

[29] *Id.* at § 260.1(c).
[30] *See*, *e.g.*, Curtis v. 7-Eleven, Inc., 2022 WL 4182384 at *12 ("The plain meaning of that term is straightforward. 'Recyclable' simply means 'capable of being recycled.'"); Duchimaza v. Niagara Bottling, LLC, No. 21 Civ. 64342022, 2022 WL 3139898, at *9 (S.D.N.Y. Aug. 5, 2022); Swartz v. Coca-Cola Co., No. 21-CV-04643-JD, 2022 WL 17881771, at *1 (N.D. Cal. Nov. 18, 2022) ("In everyday usage, 'recyclable' is an adjective that means capable of being recycled (e.g., 'the plate is made of recyclable paper'), or a noun that denominates an object that can be recycled (e.g., 'the students raised funds by selling recyclables to disposal facilities'). It does not mean a promise that an object will actually be recycled, as plaintiffs would have it.").

climate change-related claims, (3) compostable claims, (4) recyclable claims, and (5) renewable energy claims.

With respect to other claims on which we are not submitting comments, and consistent with the general principle articulated above, we encourage the FTC to consider how the standards for each environmental marketing claim could be clarified and strengthened to better ensure it is supported by an actual environmental benefit so that consumers are not misled about the environmental attributes of goods and services in the marketplace.

1. Carbon Offsets, § 260.5

Carbon offsets have become an attractive tool for polluters to address the impact of their greenhouse gas ("GHG") emissions on climate change. Many companies have decided to meet their sustainability goals by purchasing carbon offsets or carbon credits, which represent a reduction in GHG emissions or removal of GHGs from the atmosphere that balances out some or all of the GHG emissions produced by the purchasing companies.[31] However, the voluntary carbon offset market has been losing credibility, because of concerns with the validity of the GHG emission reductions that the offsets represent.[32] Furthermore, the general public appears to

[31] While either reducing GHG emissions elsewhere or removing GHGs from the atmosphere (e.g., through carbon capture and sequestration or direct air capture) can result in a valid carbon offset or carbon credit, for simplicity this comment means both GHG emission reductions and GHG removals when referring to "GHG emission reductions." Furthermore, the voluntary carbon offset market and carbon offsets therein, as discussed in this comment, do not include or refer to the compliance carbon offset market, such as California's Compliance Offsets Program. The Compliance Offsets Program contains rigorous requirements to ensure that the emission reductions behind its offset credits are real, permanent, quantifiable, verifiable, enforceable, and additional.

[32] Patrick Greenfield, *As Carbon Offsetting Faces 'Credibility Revolution', Shoppers Should Be Wary*, GUARDIAN (Mar. 10, 2023), https://www.theguardian.com/environment/2023/mar/10/as-carbon-offsetting-faces-credibility-revolution-shoppers-should-be-wary; Patrick Greenfield, *Biggest Carbon Credit Certifier To Replace Its Rainforest Offsets Scheme*, GUARDIAN (Mar. 10, 2023), https://www.theguardian.com/environment/2023/mar/10/biggest-carbon-credit-certifier-replace-rainforest-offsets-scheme-verra-aoe; and Patrick Greenfield, *Revealed: More Than 90% of Rainforest Carbon Offsets by Biggest Certifier Are Worthless, Analysis Shows*, GUARDIAN (Jan. 18, 2023), https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe (submitted herewith). *See also* WORLD ECON. F., THE VOLUNTARY CARBON MARKET: CLIMATE FINANCE AT AN INFLECTION POINT 6-8 (2023), https://www3.weforum.org/docs/WEF_The_Voluntary_Carbon_Market_2023.pdf (submitted herewith). *See also* ADVERT. STANDARDS AUTH., ENVIRONMENTAL CLAIMS IN ADVERTISING 21-22 (2022), https://www.asa.org.uk/static/6830187f-cc56-4433-b53a4ab0fa8770fc/CCE-Consumer-Understanding-Research-2022Final-090922.pdf (submitted herewith); and *New Research into Understanding of Environmental Claims*, ASA NEWS (Oct. 20, 2022),

have grown skeptical about carbon offset marketing claims and tends to believe that unqualified carbon offset claims are inherently misleading.[33]

This "crisis in confidence" in carbon offsets is concerning. Voluntary offsets can be a valuable tool in addressing climate change, if the offset programs use reliable standards that ensure the offsets represent the environmental benefit that consumers expect: a reduction in GHG emissions that is additional to any reduction that would likely have occurred without the purchase of the offset. We urge the FTC to make revisions to the Green Guides necessary to ensure that any carbon offset claim is underwritten by this environmental benefit of additionality and thus meets consumers' reasonable expectations.

The current guidance in the Guides is too narrow to protect consumers' expectations of additionality, because it requires marketers to pass only the *regulatory* additionality test. We request that the FTC revise the guidance to include other factors necessary to ensure the additionality of carbon offsets. We also urge the FTC to expressly put the onus on marketers making carbon offset claims to substantiate (or readily be able to substantiate) that the GHG emission reductions associated with the offsets are indeed additional. At present, there is no such guarantee.

Consumers reasonably expect that carbon offsets represent actual reductions in emissions of greenhouse gases.

Consumers do not necessarily have a sophisticated understanding of the complicated and technical nature of the carbon offset market.[34] However, consumers reasonably do expect that carbon offsets represent actual, additional GHG emission reductions. Indeed, the whole purpose of purchasing carbon offsets and offset credits is that consumers can "offset" their own GHG emissions by effecting reductions in GHG emissions elsewhere,[35] and consumers are willing to

https://www.asa.org.uk/news/new-research-into-understanding-of-environmental-claims.html (submitted herewith).

[33] MARTIN SCHALKWIJK, KANTAR PUBLIC, CO2 OFFSET CLAIMS: CONSUMER SURVEY 12 (Jul., 2022), https://www.acm.nl/system/files/documents/acm-publishes-behavioral-research-into-co2-compensation-when-purchasing-airline-tickets.pdf (submitted herewith); *see also* Saskia Bierling, *ACM: Consumers Find Claims Regarding Carbon Offset Unclear*, NETH. AUTH. FOR CONSUMERS & MKTS. (Oct. 13, 2022), https://www.acm.nl/en/publications/acm-consumers-find-claims-regarding-carbon-offset-unclear.

[34] FTC Guides for the Use of Environmental Marketing Claims, 75 Fed. Reg. 63,552, 63,554-55, 63,595-96 (proposed Oct. 15, 2010); *see also* SCHALKWIJK, *supra* note 33, at 6-9.

[35] FTC Statement at 59-60.

do so.[36] "When consumers purchase carbon offsets, they expect that they are supporting a reduction in greenhouse gas emissions."[37]

Additionality is necessary for a Carbon Offset claim to be valid.

A carbon offset claim is only valid when the GHG emission reductions associated with the offset are induced by the financial incentive that the offset provides rather than through any legal requirement or usual practice. If this financial incentive cannot be shown to be responsible for the reduction in GHG emissions, then the offset is invalid and the offset claim is deceptive.

For example, a producer that is developing a new project that is forecast to emit 100 tons of carbon dioxide over the life of the project wishes to balance out those emissions by purchasing carbon offsets. The producer wants to limit the increase of carbon dioxide in the atmosphere attributable to the project to 10 tons, so the producer buys carbon offsets representing the reduction of 90 tons of carbon dioxide in the atmosphere over the life of the project. The revenue from the purchase of the offsets is transferred to a landowner whose forestland will reduce carbon dioxide in the atmosphere by 90 tons over the life of the project, if no timber harvests occur. For those offsets to be valid, the revenue generated from the purchase of the offsets must contribute to the landowner's forgoing timber harvests over the life of the project. If the landowner had already committed to not harvesting timber over that period of time, the offsets would be invalid, because the financial incentive created by the offsets sale would have no verifiable effect on the amount of carbon dioxide in the atmosphere. In other words, during the life of the project, nothing with the forestland would be different and no GHG reductions associated with the forestland's existence would exceed the reductions that would have already occurred without the offset sale. Business as usual would prevail, regardless of the producer's purchase of the offsets.

When the financial incentive from an offset induces little or no change in GHG emissions or emission reductions, the status quo remains and nothing actually gets offset. A valid carbon offset must represent actual GHG emission reductions that are additional to those that would already reasonably be expected to occur. A carbon offset that does not have this additionality is not really an offset, and carbon offset claims not backed by additionality are per se deceptive.

[36] Rainer Romero-Canyas, *Study: Consumers Willing To Pay Carbon Offsets for Air Travel*, ENV'T DEF. FUND (Sept. 25, 2019), https://blogs.edf.org/climate411/2019/09/25/study-consumers-willing-to-pay-carbon-offsets-for-air-travel/.
[37] FTC Guides, 75 Fed. Reg. at 63,597.

The Green Guides presently require only limited additionality.

When the FTC added § 260.5 on carbon offset claims to the Guides in 2012, the FTC intended the section's guidance to be limited largely because of the complex and evolving nature of carbon offsets and the carbon offset market.[38] In the first iteration of § 260.5, the FTC provided at least some protection of consumers' reasonable expectation that the purchase of carbon offsets should result in additional GHG emission reductions:

> (c) It is deceptive to claim, directly or by implication, that a carbon offset represents an emission reduction if the reduction, or the activity that caused the reduction, was required by law.

The FTC also provided the main principle justifying this guidance on regulatory additionality:

> The record indicates that deception is likely because consumers expect their purchase to generate emission reductions that would not necessarily occur otherwise.[39]

The latter principle is not unique to the issue of regulatory additionality, but regulatory additionality is all the Green Guides presently require. As a result, a marketer can make a carbon offset claim that is facially compliant with § 260.5 (e.g., meets regulatory additionality) but ultimately deceptive to consumers, because the offset sold might not actually result in GHG emission reductions that are additional to reductions that would have occurred without the consumer's purchase of the offset. Such an offset fails to deliver the environmental benefit consumers expect. Consumers believe that their purchase of carbon offsets should "make a difference," which "means that [GHG emission reductions associated with offsets are] *additional* to what would have happened otherwise,"[40] and not just because the offset was not required by law. The FTC should act on its own recognition of the necessity of additionality to carbon offset claims and expand § 260.5 to require additionality more broadly.

The onus should be on marketers to ensure their carbon offset claims are backed by additionality.

Recent consumer perception data suggests that consumers find unqualified carbon offset marketing claims untrustworthy.[41] Essentially, consumers suspect that companies that make

[38] FTC Statement at 70.
[39] FTC Statement at 74.
[40] FTC Statement at 74, n. 251 (quoting Ed Holt, Carbon Offsets Workshop Transcript at 165) (emphasis added).
[41] SCHALKWIJK, *supra* note 33, at 10, 12.

carbon offset claims, without further proof of emissions reductions, are not actually benefitting the environment and are instead, in typical greenwashing fashion, financially benefitting themselves by only appearing to care about their impact on the environment.[42] Consumers want details backing any carbon offset claim so they can know how their carbon offset purchases reduce GHG emissions and thus "make a difference."[43]

In addition to clarifying and expanding the scope of "additionality," the FTC can address this perception issue by requiring marketers to substantiate their carbon offset claims. In 2012, the FTC declined to issue more specific guidance on additionality, because it found that tests to ensure additionality were uncertain and unreliable.[44] There are still some concerns over some additionality methodologies in the voluntary market. But given the necessity of additionality for the validity of all carbon offsets and for carbon offset claims to not be misleading, the FTC must require marketers to ensure their offset claims are backed by additionality.

Established carbon offset programs exist for marketers to generate independently verified carbon offsets for sale, and these programs typically employ widely recognized additionality tests.[45] These programs are available to all marketers of carbon offsets and provide transparent substantiation of additionality. Therefore, a requirement for substantiation of additionality would not be unfair or impracticable, because while some potentially unreliable offset methodologies exist, marketers can assess and choose a method that more reliably substantiates the offsets' additionality.

Ultimately, the onus should be on marketers to ensure their offsets have additionality *before* making their offset claims to consumers, as they are far better positioned than a consumer to verify the claim. By requiring marketers to ensure additionality, the FTC would not be engaging in environmental policy making,[46] because the FTC would not be directing marketers to select any one program or methodology and would not be setting technical standards within the environmental field. The FTC would merely be holding marketers to account for the additionality that is necessary to make valid carbon offset claims. If a marketer cannot ensure additionality through any available means of substantiation, then that marketer should not be permitted to make a carbon offset claim to consumers.

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[42] *Id*. at 12.
[43] FTC Statement at 74, n. 251; SCHALKWIJK, *supra* note 33, at 13; *see also* ADVERT. STANDARDS AUTH., *supra* note 32.
[44] FTC Guides, 75 Fed. Reg. at 63,594-95, 63,597; FTC Statement at 61, 70-71, 73-74.
[45] *See* GREENHOUSE GAS MGMT. INST., *Carbon Offset Programs*, https://www.offsetguide.org/understanding-carbon-offsets/carbon-offset-programs/.
[46] *See* FTC Guides, 75 Fed. Reg. at 63,597. "Because the Commission does not set environmental standards or policy, establishing a specific additionality test or tests appears to be outside of the FTC's purview." *Id.* However, the FTC has a "responsibility to ensure that consumers are not misled" by carbon offset claims not backed with additionality. *Id.*

Proposed Revisions to § 260.5

Below, we propose specific changes, in redline, to the existing language of § 260.5, to address the issues identified above. We also suggest adding two examples to illustrate for marketers how the revised language would operate.

(c) It is deceptive to claim, directly or by implication, that a carbon offset represents an emission reduction if the reduction, or the activity that caused the reduction, was required by law or would otherwise have occurred under business-as-usual.

(1) For the purposes of this section, "business-as-usual" means the set of conditions or activities reasonably expected to occur in normal course, absent any financial incentives provided by offsets, taking into account current economic and technological trends.

(2) To avoid deception, a marketer of a carbon offset claim must have substantiation of the marketer's compliance with (c) and (c)(1) above.

Example 3: The Lorax Foundation has planted 100 trees a year since 1995. In 2023, The Lorax Foundation seeks to sell a "carbon offset" representing the carbon reduction value of the 100 trees it was scheduled to plant that year. This is deceptive. The Lorax Foundation would need to plant trees in addition to the 100 trees it was already going to plant for the year for the Foundation to be able to sell a valid carbon offset.

Example 4: An energy company plans to develop a solar power project that would be able to generate power at a lower cost than producing the equivalent energy with GHG-emitting fossil fuels. The company also receives revenue from carbon offsets, which it uses to help finance building the project's infrastructure and procuring transmission contracts for the generated solar energy. At the time the offsets are sold, the company plans to have the project up and running within a year. Even though the difference in cost of energy production provides the company with substantial financial incentive to develop the solar power project, because the revenue from the offsets sale is a factor in the company's development of the project, the marketing of the offsets is not deceptive. The offsets are responsible in part for the reduction in GHG emissions compared to producing the equivalent energy with fossil fuels, and because the project's infrastructure and transmission contracts are not already completely financed, the offsets have additionality.

If the company has already completely secured funding for the development and operation of the project, and a marketer bases its sale of offsets on the claim that the revenue will support the development of the project, then that marketer has made a deceptive claim. The offsets do not

have additionality, because the GHG emission reductions associated with the project are already reasonably expected to occur without the offset sales.

2. Other Climate Change-Related Claims, § 260.5

The FTC also solicited comments regarding the Green Guides' treatment of various other terms that convey carbon neutrality, including "net zero," "carbon neutral," "low carbon," and "carbon negative."[47] Even though the FTC recognized in 2012 that, in many instances, marketers may be improperly claiming something akin to a carbon offset by touting either a specific product or their entire operation as carbon neutral, the FTC declined to provide definitions for such carbon-related terms, based at least partially on a concern that doing so would exceed its authority and result in environmental policy-making.[48] Given the marked increase in such claims in the last decade and the potential for consumer deception associated with such claims,[49] the States urge the FTC to include in the Green Guides guidance to marketers regarding the use of terms intended to neutralize the climate change impact of a product or its production or an entire company or operation.

Consumers expect that carbon neutrality claims are tied to valid carbon emission reductions.

While not all consumers have a thorough understanding of carbon offsets and the carbon offset market, most consumers still reasonably expect that purchases of carbon offsets will result in emission reductions.[50] As the FTC recognized in 2012, businesses increasingly purchase offsets to balance the emissions associated with the production, sale, or use of their products and services, and often tout these offsets in advertisements that their products and services are "carbon neutral," "net zero," or "carbon negative" or otherwise have a neutral or positive impact on the environment.[51]

Studies show that the majority of people do not understand the scope of such claims; indeed, at least one study concluded that only three out of 100 participants understood the scope of a "carbon neutral" claim.[52] Other studies have shown that many consumers expect that a product

[47] 87 Fed. Reg. 77,768 (Dec. 20, 2022).
[48] FTC Statement at 60.
[49] *See generally* THOMAS DAY ET AL., NEW CLIMATE INSTITUTE, CORPORATE CLIMATE RESPONSIBILITY MONITOR 2022: ASSESSING THE TRANSPARENCY AND INTEGRITY OF COMPANIES' EMISSION REDUCTION AND NET-ZERO TARGETS (2022), https://newclimate.org/sites/default/files/2022-06/CorporateClimateResponsibilityMonitor2022.pdf.
[50] *See, e.g.*, FTC Statement at 62, n. 209; *see also supra* notes 32-37.
[51] FTC Statement at 60.
[52] *See* Soren Amelang, *"Climate Neutral" Product Labels Mislead Vast Majority of Consumers*, CLEAN ENERGY WIRE (Sep. 26, 2022), https://www.cleanenergywire.org/news/climate-neutral-

so labeled was produced in a way that is less harmful to the environment or takes environmental protection into account, when the reality is that a "carbon neutral" label simply means that the producer calculated emissions and bought enough worldwide offsets to balance the impact of those emissions.[53] In addition, the scope of a "carbon neutral" claim often is unclear, and reasonable consumers may assume that such a claim applies to the entire production and supply chain of a product, or to a company's entire operation.[54] Moreover, as noted in the States' comments above, consumers often assume that a carbon offset credit includes an additionality component when the opposite may be true.[55] Despite these disparities between carbon neutrality claims and consumer perception, the number of retail products and services labeled as having a neutral, positive, or minimal climate impact is increasing rapidly.[56]

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product-labels-mislead-vast-majority-consumers-survey (citing consumer study conducted in Germany, found at https://www.verbraucherzentrale.nrw/pressemeldungen/presse-nrw/klimaneutrale-produkte-89-prozent-fuer-klare-regeln-und-gepruefte-siegel-77472) (submitted herewith).

[53] See ADVERT STANDARDS AUTH., *supra* note 32, at 11-18. Indeed, litigation relating to the veracity and accuracy of carbon neutrality claims is on the rise in many other countries, such as the Netherlands and Sweden. *See, e.g.*, Isabel Sutton, *Company Climate Claims in Court: Pending Cases Will Shape Future of "Net Zero" Pledges*, CLEAN ENERGY WIRE (Sept. 23, 2022), https://www.cleanenergywire.org/factsheets/company-climate-claims-court-pending-cases-will-shape-future-net-zero-pledges; Isabel Sutton, *Climate Pledges Put Companies in Crosshairs of Consumer Litigation*, CLEAN ENERGY WIRE (Nov. 3, 2022), https://www.cleanenergywire.org/news/climate-pledges-put-companies-crosshairs-consumer-litigation. In addition, the United Kingdom Climate Change Committee (an advisory group) suggested last year that many corporate offsetting claims lack clarity, and that terms like "net zero" or "carbon neutral" can obfuscate the difference between companies that are actively reducing their own emissions and those that merely rely on carbon offsets. *See*, *e.g.*, *The Climate Change Committee's Report on Carbon Offsetting: How Should Businesses Respond?*, PINWHEEL (Oct 24, 2022), https://www.linkedin.com/pulse/climate-change-committees-report-carbon-offsetting-how-should-; CLIMATE CHANGE COMMITTEE, *Business Use of Offsets Risks Delaying Net Zero* (Oct. 13, 2022), https://www.theccc.org.uk/2022/10/13/business-use-of-offsets-risks-delaying-net-zero/. *See also* ASA NEWS, *supra* note 32 (finding little consensus as to the meaning of climate change-related claims such as "carbon neutral" and "net zero" and calling for reform and consistency).

[54] *See, e.g.*, *Updated Environment Guidance: Carbon Neutral and Net Zero Claims in Advertising*, CAP NEWS (Feb. 10, 2023), https://www.asa.org.uk/news/updated-environment-guidance-carbon-neutral-and-net-zero-claims-in-advertising.html. *See also* Catherine Boudreau, *A Climate Change Glossary*, BUS. INSIDER INT'L (Feb. 19, 2023), https://businessinsider.mx/net-zero-carbon-neutral-negative-climate-company-goals-2023-2/?r=US&IR=T.

[55] *See supra* notes 32-37.

[56] *See, e.g.*, Amelang, *supra* note 52.

"Carbon Neutral" claims reliant on offsets should be governed by § 260.5 of the Green Guides.

Providing context for a carbon neutrality claim goes a long way to clearing up any consumer misperception.[57] Consistent with our comments above, the States recommend that the FTC provide guidance that clarifies that a marketer making a claim that a product, operation, or company has a positive, neutral, or minimal impact on climate change based upon the purchase of carbon offsets must be able to substantiate, among other things, that such offsets are compliant with § 260.5, subdivisions (a) through (c), of the Green Guides. The States further recommend that the FTC require companies making marketing claims associated with the use of carbon offsets to clarify that the use of offsets is not equivalent to reducing or eliminating the GHG emissions associated with, and does not imply anything about the environmental benefit of, their products or operations.[58]

Comparative claims regarding climate change impacts, such as "Low Carbon" and "Lower Carbon," should be qualified and, where possible, quantified.

The Green Guides generally provide that marketers making "comparative" claims must ensure that such claims are clear and are substantiated.[59] Such guidance is of utmost importance with regard to claims that products or services are "low carbon" or "lower carbon." Therefore, the FTC should make clear that this guidance applies equally to claims regarding the GHG emissions or the climate change impact of a product or service. For example, reasonable consumers may be deceived by the use of vague, undefined, and unqualified terms such as "low carbon" and "lower carbon" where the relative environmental benefit of such products or services, if any, is not explained. The States recommend that the FTC add to the Green Guides a requirement that a comparative climate change-related claim must be qualified and, where possible, quantified.

Proposed Additions to the Green Guides

For the foregoing reasons, the undersigned recommend the following additions to the Green Guides:

§ 260. Climate Change-Related Claims.

(a) It is deceptive to misrepresent, either directly or by implication, that a product, service, operation, or company is "carbon neutral," "climate neutral," "net zero," "carbon negative," "low carbon," or any other term that suggests that a product or its production

[57] See ADVERT. STANDARDS AUTH., *supra* note 32, at 24-26.
[58] *See* Greenhouse Gas Mgmt. Inst., Comment Letter on Proposed Rule To Update Guides for the Use of Environmental Marketing Claims, at 10 (Feb. 16, 2023), available at https://www.regulations.gov/comment/FTC-2022-0077-0100.
[59] 16 C.F.R. § 260.3(c) (2023).

or a company or operation has a neutral, positive, or minimal impact on climate change if that claim relies, in whole or in part, on the purchase of carbon offsets and the marketer cannot substantiate that the carbon offsets relied upon comply with § 260.5, subdivisions (a)–(c).

(b) Research suggests that reasonable consumers may interpret claims that a product, service, operation, or company is "carbon neutral," "climate neutral," "net zero, "carbon negative," "low carbon," or any other term that suggests a product or its production or a service, company, or operation has a neutral, positive, or minimal impact on climate change differently than marketers may intend. Unless marketers have substantiation for all their express and reasonably implied climate change-related claims, marketers should clearly and prominently qualify their climate change-related claims. For instance, marketers may minimize the risk of deception by specifying whether the term "carbon neutral" applies to the production of a product, the pre- or post-production supply chain, or a company's greater operations as they relate to the product.

Example 1: A plastic water bottle labeled "carbon neutral" would be deceptive, because it is unclear whether the production of the plastic used in production of the bottle, the production of the bottle, the manufacture of the contents of the bottle, or the distribution of the bottle is carbon neutral. A claim that "this bottle is carbon neutral because the emissions resulting from the manufacture of this bottle were 100% balanced out through the purchase of carbon offsets" would not be deceptive.

(c) To avoid deception and to ensure consistency with § 260.3(d), and § 260.4(b), a marketer should clearly and prominently qualify any claim that a product is "low carbon" or "lower carbon" or any other similarly comparative claim by including an explanation of such a claim. The marketer should have substantiation for the comparison, ideally by providing a quantification that supports the comparison.

Example 2: A plastic bottle is labeled "lower carbon." Absent qualification, this claim is deceptive. First, reasonable consumers may interpret this claim in several ways, including but not limited to "lower carbon than our previous bottles" or "lower carbon than the competition" or "produced with fewer greenhouse gas emissions than the average bottle." Second, reasonable consumers may believe that the bottle represents a significant environmental benefit when the reality is that it may not. If the marketer has reduced the climate change impact of production of the bottle by 15% compared to prior bottles produced by the same marketer, either directly or through purchase of a carbon offset: (a) a claim that "we have reduced the climate change impact of manufacturing this bottle by 15%, compared to older versions of the bottle" would not be deceptive, and (b) a claim that the bottle is "lower carbon" absent further qualification or quantification, such as specifying the percentage, could be deceptive.

3. Compostable Claims, § 260.7

The composting landscape has changed dramatically from when the FTC last revised the Green Guides in 2012. There has been a substantial expansion in the number of industrial composting facilities operating in the United States,[60] and countless items are labeled compostable,[61] when, for various reasons, they often provide no real environmental benefit over non-compostable items. We urge the FTC to overhaul this section to incorporate not just scientific standards, but also the known practical limitations inherent in composting at scale.

Consumers perceive "compostable" items to be superior to non-compostable items, when in fact they may not be under prevailing circumstances.

As noted above, a majority of consumers actively look to purchase environmentally friendly products,[62] and are likely to pay a premium for products labeled as "compostable," even if that product may not actually be compostable using a home composting device or compost pile or be accepted at many industrial composting facilities.[63]

It is also well documented that consumers are generally not aware of the realities of the waste disposal processes in their states and communities.[64] Moreover, many consumers believe there is some net environmental benefit generated when compostable and/or organic items are disposed of in a landfill. In other words, many environmentally-conscious consumers purchase "compostable" products but then ultimately do not compost them (due to lack of access to facilities that can compost them, or because they become mixed with non-compostable waste) and instead disposes of them as solid waste. Even if the compostable product ends up in a landfill, the environmentally-conscious consumer believes that the compostable product is still

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[60] *See* Blair Michal, *How Much Are We Composting in the United States*, BETTER EARTH (May 5, 2022), https://becompostable.com/how-much-are-we-composting-in-the-united-states/.

[61] "The number of certified compostable products has increased by 80% in the past few years, according to [the Biodegradable Products institute. Many of these products, like bags, cups and dishes, are increasingly available in grocery stores." Katherine Roth, *Compostable 'Bioplastics' Made Inroads with Consumers*, AP NEWS (Feb. 9, 2019), https://apnews.com/article/lifestyle-composting-9f421243df6343a89407f423d37087cb.

[62] ECONOMIST INTELLIGENCE UNIT, *supra* note 4.

[63] "Across all end-use segments, 60 to 70 percent of consumers said they would pay more for sustainable packaging." David Ferber et al., *Sustainability in Packaging: Inside the Minds of US Consumers*, MCKINSEY & CO. (Oct. 21, 2020), https://www.mckinsey.com/industries/paper-forest-products-and-packaging/our-insights/sustainability-in-packaging-inside-the-minds-of-us-consumers.

[64] *See, e.g.,* Danny Taufik et al., *The Paradox Between the Environmental Appeal of Bio-Based Plastic Packaging for Customers and Their Disposal Behavior*, 705 SCI. TOTAL ENV'T 135820 (2020), https://www.sciencedirect.com/science/article/pii/S0048969719358152.

somehow *better* for the environment. However, that is not necessarily true.[65] Conditions in landfills (specifically, the absence of necessary microorganisms, moisture, oxygen, and nitrogen, among other things) are not conducive to composting, so the breakdown of a compostable item in a landfill may not result in an environmental benefit when compared to a non-compostable counterpart. For instance, compostable products in landfills release methane, a potent greenhouse gas,[66] whereas non-compostable products do not.

This consumer confusion about the benefits of "compostable" items is driven in part by the improper labeling of packaging and products that will not compost except in narrow circumstances or that, for various reasons, will more likely end up in a landfill.

"Compostable" should be used only where the item will compost under prevailing conditions.

As communities and municipalities turn to composting of organic waste to address landfill methane emissions[67] and decrease municipal solid waste tonnage,[68] it is imperative that manufacturers, marketers and retailers carefully and correctly convey information about composting or the compostability of a product or packaging that is based on competent and reliable scientific evidence, at minimum, and that also takes into account the realities of existing composting programs.

At present, the ASTM standards provide that a compostable item which is sent to an industrial composting facility must break down and degrade into finished compost within 180 days.[69] However, ASTM standards do not always conform to actual practice in industrial composting

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[65] U.S. ENV'T PROT. AGENCY, *Reducing the Impact of Wasted Food by Feeding the Soil and Composting* (last visited Apr. 4, 2023), noting that by composting wasted food and other organics, methane emissions are significantly reduced relative to disposing of those items in landfills; Robert McSweeney, *Scientists Are Concerned by 'Record High' Global Methane Emissions*, CARBON BRIEF (Jul. 14, 2020), https://www.carbonbrief.org/scientists-concerned-by-record-high-global-methane-emissions.

[66] Shelia Hu, *Composting 101*, NAT. RES. DEF. COUNCIL (Jul. 20, 2020), https://www.nrdc.org/stories/composting-101#benefits.

[67] *See, e.g.*, MASS. EXEC. OFF. ENERGY & ENV'T AFFS., *Home Coposting* (Apr. 20, 2021), *https://www.mass.gov/doc/home-composting-tips-a-guide-to-composting-yard-food-waste/download*; CONN. DEP'T ENERGY & ENV'T PROT., Draft CMMSS Amendment (Jan. 2023), https://portal.ct.gov/-/media/DEEP/waste_management_and_disposal/Solid_Waste_Management_Plan/January2023/CMMS-Amendment-2023-DRAFT.pdf; CAL. DEP'T RES. RECYCLING & RECOVERY, *New Statewide Mandatory Organic Waste Collection*, https://calrecycle.ca.gov/organics/slcp/collection/ (last visited Apr. 21, 2023).

[68] U.S. ENV'T PROT. AGENCY, *National Overview: Facts and Figures on Materials, Wastes and Recycling* (Dec. 3, 2022), https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials.

[69] *See, e.g.*, ASTM D6400 or ASTM D6868.

facilities in the United States. For example, field studies across the country demonstrate that the timeframe for composting in a majority of industrial composting facilities in those states—that is, the time that material has to break down before it gets exported as usable compost, to make way for incoming material—is only 45-60 days, with a duration of 61-90 days at a minority of facilities.[70] Moreover, despite multiple updates over the past twenty years, these ASTM standards continue to include a biodegradation rate requirement that does not align with actual industrial compost processing timeframes. While the efforts made by individual states to address this discrepancy are promising and important, we now call on the FTC to survey industrial composting facilities across the country, specifically mixed-materials facilities, to determine an appropriate and consistent timeframe for the composting of compostable material at an industrial composting facility for inclusion as a standard in the Green Guides. At minimum, products and packaging should only be labeled "compostable" when defensible scientific evidence demonstrates that all materials in the product or package will achieve the rate of biodegradation necessary to become finished compost within industrial composting facility timeframes where the product is sold. But the FTC must also take into account that in practice, the material must be able to break down more quickly.

It is also important that manufacturers and marketers accurately convey the realities of placing compostable items into a landfill, particularly where it is more likely than not that the items will end up in the landfill (in the case of pet waste bags, for example).[71]

The current Green Guides do not account for the limitations inherent in existing composting programs and disposal practices.

During the Green Guides revision process in 2012, the Commission decided to retain its guidance from the 1992 update that requires manufacturers and marketers to "clearly qualify" their claims about the compostable nature of their products or packaging.[72] The Commission based this decision on evidence of the continued scarcity of large-scale composting facilities and consumer perception on the availability of composting facilities and the compostability of products.[73] At that time, the Commission noted that there were only 92 commercial composting facilities and only 39 municipal composting facilities operating.[74] However, in 2023, there are

[70] CAL. COMPOST COAL., *Composted Organics*, https://californiacompostcoalition.org/composted-organics/ (last visited Apr. 21, 2023); BIOCYCLE, *Composting Roundup* (Nov. 14, 2018), https://www.biocycle.net/composting-roundup-90/.
[71] U.S. ENV'T PROT. AGENCY, *supra* note 65; McSweeney, *supra* note 65.
[72] FTC Statement at 112-14.
[73] *Id*.
[74] *See id.* at 113, n. 370.

thousands of industrial composting facilities in the United States,[75] and thousands more will commence operation in the next decade.[76] Considering the proliferation of greenwashing and eco-advertising and marketing,[77] we recommend that the FTC fully revise § 260.7 of the Green Guides to provide guidance that is informed by both scientific standards and the limitations of existing composting programs and practices, to better foreclose deceptive advertising and marketing practices relating to composting.

Further, in conjunction with our proposed revisions below, we invite the Commission to conduct consumer studies regarding consumer perceptions as to whether consumers believe that disposing of compostable products in landfills provides environmental benefits. While § 260.7(c) instructs marketers to "qualify compostable claims . . . to avoid deception if . . . the claim misleads reasonable consumers about the environmental benefit provided when the item is disposed of in a landfill,"[78] we believe that such studies will show that consumers still are not aware that a "compostable" item is only beneficial when it is properly composted.

Proposed Revisions to § 260.7

For reasons set forth above, we recommend revising § 260.7 to provide greater clarity about when an item can be labeled "compostable."

Given that composting is a process conducted under controlled standards, we believe it would be helpful to define key terms and phrases that reflect those standards, to ensure consistent interpretation and application. Therefore, we recommend that the FTC insert the following definitions into § 260.7:

(1) <u>"Composting" is a managed process that controls the biological decomposition and transformation of biodegradable materials into a humus-like substance called compost.[79] The decomposition of materials occurring in any other environment, such as landfills, exposed lands, or bodies of water, is not composting.</u>

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[75] As of 2018, "there are currently 4,700 industrial composting facilities in the U.S." Kate Lewis, *A New Industrial Revolution for Plastics*, U.S. DEP'T AGRIC. BLOG, (Sept. 19, 2018); https://www.usda.gov/media/blog/2018/09/19/new-industrial-revolution-plastics.
[76] *See* Michal, *supra* note 60.
[77] F.T.C., *FTC Seeks Public Comment on Potential Updates to Its Green Guides for Use of Environmental Marketing Claims* (Dec. 14, 2022), https://www.ftc.gov/news-events/news/press-releases/2022/12/ftc-seeks-public-comment-potential-updates-its-green-guides-use-environmental-marketing-claims/.
[78] 16 C.F.R. § 260.7(c) (2023).
[79] Derived from U.S. ENV'T PROT. AGENCY, *Composting at Home* (Nov. 22, 2022), https://www.epa.gov/recycle/composting-home ("Composting is a controlled, aerobic (oxygen-required) process that converts organic materials into a nutrient-rich soil amendment or mulch through natural decomposition.") and Dana Adacova et al., *The Effect of Biodegradation/Degradation of Degradable Plastic Material on Compost Quality*, 20 J. SOC'Y

(2) "Finished compost" compost is the finished product that results from aerobic composting. It is a soil amendment containing a wide variety of nutrients, micro-nutrients, and organic matter, all of which benefits the soil and are useful for soil restoration.

(3) "Industrial composting facility" is an authorized location where controlled aerobic decomposition of organic materials is conducted and where composting is the primary activity. An industrial composting facility is designed to produce finished compost and may include, but is not limited to, a commercial facility, a not-for-profit facility, a public facility, a municipal and/or a governmental facility.

(4) "Home composting" is composting on premises where composting is not the primary purpose of the location. Home composting locations include, but are not limited to, private residences or complexes, and community gardens.

Further, we propose that the FTC revise § 260.7 to read as follows:

§ 260.7 Compostable claims.

(a) Any item labeled "compostable" must specify whether it is compostable in an industrial composting facility or a home composting pile or device, or both; and must meet the further specifications below for each claim.

(b) It is deceptive to misrepresent, directly or by implication, that a product or packaging is "compostable in an industrial composting facility," unless that product or packaging, as demonstrated through reliable and competent scientific evidence, achieves all of following:

1) The product or packaging is capable of breaking down and/or biodegrading into finished compost; and

2) The product or packaging achieves the rate of biodegradation necessary to become finished compost within industrial composting facility timeframes where the product is marketed or sold.

(c) It is deceptive to misrepresent, directly or by implication, that a product or packaging is "compostable in a home composting pile or device" unless that product or packaging achieves all of the following:

1) The product or packaging is capable of breaking down and/or biodegrading into finished compost in a home compost pile or device, as demonstrated by certification

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ECOLOGICAL CHEMISTRY & ENG'G 783–98 (2013), https: //sciendo.com/pdf/10.2478/eces-2013 0054 (describing composting as the transformation of biologically decomposable material through a controlled process of biooxidation that "proceeds through mesophilic and thermophilic phases and results in the production of carbon dioxide, water, minerals, and stabilized organic matter (compost or humus).").

to an applicable home compost standard such as TUV Austria OK Compost Home; and

2) The product or packaging achieves the rate of biodegradation necessary to become finished compost within 12 months of being placed in a home composting pile or device.

(d) It is deceptive to advertise a product or packaging as "compostable in an industrial composting facility" or "compostable in a home compost pile or device" unless the marketer or advertiser has conducted or caused to be conducted reliable scientific testing on the composability of all components of the product or packaging.

(e) It is deceptive to market or advertise a product or packaging as "compostable in an industrial composting facility" or "compostable in a home composting pile or device" if, when used as intended, the product or packaging will not biodegrade into finished compost in any time frame, regardless of how it is disposed, and is more likely than not to be ultimately deposited into a landfill or otherwise onto land, released into bodies of water, incinerated, or disposed of in any manner other than an industrial compost facility.

(f) It is deceptive to market or advertise a product or packaging as "compostable in an industrial composting facility" if it is an accepted item at less than 60% of industrial composting facilities in the geographic area where it is being sold.

(g) To avoid consumer deception, any item labeled "compostable in an industrial composing facility" *must also contain* the disclaimer: ""This item is not 'compostable' when disposed of in trash/landfill."

(h) To avoid consumer deception, items labeled "home compostable" *must also contain* the disclaimer "This item is not 'compostable' when disposed of in trash/landfill."

With respect to the examples provided in this section, we make the following recommendations:

We recommend revising **Example 5** to state that it is deceptive to market and/or advertise pet and human waste receptacles and bags as "compostable in an industrial composting facility," as such waste is not appropriate for composting.

We further recommend revising the examples to conform to the definitions stated above.

We further recommend that the FTC consider including an example regarding "compostable" single-use utensils, as many municipalities and composting programs do not accept or desire "compostable" single-use utensils:

Example: A manufacturer makes and sells single use bamboo utensils which it markets as "compostable in an industrial compositing facility." If the single use bamboo utensils are an

accepted item at less than 60% of the industrial composting facilities in the geographic area where they are being sold, it is deceptive to market them as "compostable."

Finally, we recommend that the FTC also add the following example:

Example: A manufacturer markets a green-colored trash bag to hold food waste. A consumer purchases the bag to hold her food scraps until they are collected by her municipal waste haulers. The consumer assumes that the bag is compostable because of its green color. If the bag is not actually compostable, it is deceptive if both the primary packaging of the bag and the bag itself do not contain a prominent disclaimer stating that the bag is not compostable.

4. Recyclable Claims, § 260.12

"Recyclable" is one of the most ubiquitous environmental marketing claims. Given the reality of recycling in the United States, it is perhaps also one of the most widely misused. Although the FTC's existing guidance on use of the term "recyclable" is intended to guide marketers toward reliable and truthful claims, it has not substantially reduced consumer deception or confusion regarding which consumer items are routinely recycled. We urge the FTC to update its guidance to make explicit that "recyclable" means what the FTC has intended it to mean—and what consumers understand it to mean—namely, that when the consumer properly disposes of a "recyclable" item, it is actually recycled as a matter of course.

Consumers and marketers have different ideas about what "recyclable" means.

As FTC Chair Lina M. Khan noted in a statement following the FTC's solicitation of comments on the Green Guides, "recent reports suggest that many plastics that consumers believe they're recycling actually end up in landfills."[80] In its 2019 report on the state of recycling in the United States, the Consumer Brands Association recognized "growing evidence that much of our recycling may be going into landfills," and that our recycling system is "badly broken."[81]

As Chair Khan's statement suggests, consumers believe that when they do their part to direct an item labeled or otherwise marketed as "recyclable" away from trash and into "recycling," that

[80] 87 Fed. Reg. 77,766, 77,770 (Dec. 20, 2022).
[81] CONSUMER BRANDS ASS'N, REDUCE, REUSE, CONFUSE: HOW BEST INTENTIONS HAVE LED TO CONFUSION, CONTAMINATION AND A BROKEN RECYCLING SYSTEM IN AMERICA 1 (2019), https://consumerbrandsassociation.org/wp-content/uploads/2019/04/ConsumerBrands_ReduceReuseConfuse.pdf [hereinafter REDUCE, REUSE, CONFUSE] (submitted herewith).

item will not end up in a landfill. Or an incinerator.[82] Or as trash overseas.[83] While the vast majority of U.S. adults surveyed by the Consumer Brands Association in 2019 indicated that they participate in recycling programs,[84] the Association's report states that 73% of respondents were "surprised" to learn that "only two of the seven [plastic resin] codes were typically recyclable curbside," and 68% believed that any plastic product with a resin code symbol was recyclable.[85] Because it is often unclear to consumers what is and is not recyclable, many may participate in "wish cycling," tossing items bearing any wording or symbol indicating recyclability into their recycling bins, *hoping* they will be recycled.

Marketers have argued that a "recyclable" claim merely indicates that the item is technically capable of being recycled. For example, defendants in a recent California consumer class action lawsuit argued that "recyclable . . . merely describes a condition whereby an item has the capability of being recycled."[86] This concept of "recyclable" does not align with either the consumer's understanding of what "recyclable" means, or the intent of the Green Guides.

The history of the Green Guides reveals that the FTC's intent has always been to ensure that an item labeled "recyclable" is likely to be routinely recycled, not merely that the material the item is made from is technically capable of being recycled. As noted in one of the Green Reports relied upon by the FTC in deciding to issue its first iteration of the Guides: "Products sold nationally should not be promoted with the unqualified claim 'recyclable' unless the product is

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[82] In recent years, the plastics industry has promoted "chemical recycling" or "advanced recycling" as a solution to plastic waste. *See* AM. CHEMISTRY COUNCIL, AMERICA'S PLASTIC MAKERS, *An Introduction to Advanced Recycling and the Circular Economy*, available at https://www.americanchemistry.com/better-policy-regulation/plastics/advanced-recycling. Most chemical recycling projects in the U.S. use pyrolysis or gasification technologies, which are heat-based processes most commonly used to convert plastic waste into fuels. NAT. RES. DEF. COUNCIL, RECYCLING LIES: "CHEMICAL RECYCLING" OF PLASTIC IS JUST GREENWASHING INCINERATION 3 (Feb. 2022), https://www.nrdc.org/sites/default/files/chemical-recycling-greenwashing-incineration-ib.pdf.

[83] *See* Erin McCormick et al., *Where Does Your Plastic Go? Global Investigation Reveals America's Dirty Secret*, GUARDIAN (Jun. 17, 2019), https://www.theguardian.com/us-news/2019/jun/17/recycled-plastic-america-global-crisis. Despite a 2020 international agreement to place strict limits on exports of plastic waste from richer countries to poorer ones, trade data shows that American exports of plastic scrap to poorer countries have barely changed, and overall scrap plastics exports actually rose in the first months after the agreement took effect. Hiroko Tabuchi & Michael Corkery, *Countries Tried To Curb Trade in Plastic Waste. The U.S. Is Shipping More*, N.Y. TIMES (Mar. 12, 2021), https://www.nytimes.com/2021/03/12/climate/plastics-waste-export-ban.html.

[84] REDUCE, REUSE, CONFUSE at 4, 14.

[85] *Id.* at 6.

[86] *See, e.g.*, Defendants' Notice of Motion to Dismiss and Memorandum in Support of Motion at 25, Bargetto v. Walgreen Co., No: 3:22-cv-02639-TLT, 2022 WL 18539360 (N.D. Cal. filed Apr. 29, 2022).

currently being recycled in a significant amount everywhere the product is sold."[87] In issuing its revision to the Green Guides in 2012, the FTC clarified what a truthful recyclable claim means:

> To make a non-deceptive unqualified claim, a marketer should substantiate that a substantial majority of consumers or communities have access to facilities that *will actually recycle, not accept and ultimately discard, the product*. As part of this analysis, a marketer should not assume that consumers or communities have access to a particular recycling program *merely because the program will accept a product*."[88]

Overuse of the term "recyclable" exacerbates the solid-waste crisis and may actually hinder recycling efforts.

Despite the FTC's stated purpose to avoid consumer deception and hold marketers accountable for misleading marketing claims,[89] consumers have been misled on a very large scale regarding recycling, with far-reaching impacts.

First, misuse of the "recyclable" label induces consumers to believe that the "recyclable" items they purchase will indeed be recycled. To be sure, consumers are purchasing a lot of "recyclable" items that are not actually being recycled. As to plastics in particular, the U.S. Environmental Protection Agency used data obtained from the American Chemistry Council, the National Association for PET Container Resources, and the Association of Plastic Recyclers to report that, in 2018, just 8.7% of the plastic that was discarded in the United States was recycled.[90] Current reports place that figure at only 5 percent.[91] National Geographic reported that "of the 8.3 billion metric tons of plastic that has been produced, 6.3 billion metric tons has become plastic waste. Of that, only 9% has been recycled. The vast majority—79%—is accumulating in landfills or sloughing off in the natural environment as litter."[92] Furthermore, "recyclable" materials for which there is no market in the U.S. are often exported, which "does not always result in the exported materials being recycled and can also result in negative

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[87] Green Report II, *supra* note 2, at 25 (emphasis added).
[88] FTC Statement at 174–75 (emphasis added).
[89] FTC Statement at 174–175.
[90] U.S. ENV'T PROT. AGENCY, *Facts and Figures about Materials, Waste and Recycling, Plastics: Material-Specific Data* (Apr. 21, 2018), https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/plastics-material-specific-data#PlasticsOverview (submitted herewith).
[91] Katharine Gammon, *US Is Recycling Just 5% of Its Plastic Waste, Studies Show*, GUARDIAN (May 5, 2022), https://www.theguardian.com/us-news/2022/may/04/us-recycling-plastic-waste.
[92] Laura Parker, *Here's How Much Plastic Trash Is Littering the Earth*, NAT'L GEOGRAPHIC (Dec. 20, 2018), https://www.nationalgeographic.com/science/article/plastic-produced-recycling-waste-ocean-trash-debris-environment.

environmental, economic, and social impacts, especially if the material is contaminated or sent to a place without adequate controls or infrastructure.[93]

Inaccurate "recyclable" claims induce consumers to put items that likely will not be recycled into their recycling bins, which may actually *hinder* recycling efforts.[94] This contamination creates significant costs for states and local jurisdictions to separate and dispose of items collected as "recyclable" that are not in fact recycled because a post-consumer market for these items does not exist.[95] The Consumer Brands Association's 2019 report notes that cities and counties across the United States "are struggling with limited budgets and the stark reality that sending recycling to the landfill is less expensive" than trying to find a market for many items labeled "recyclable"

[93] See https://calrecycle.ca.gov/reports/stateof/. The California Department of Resources Recycling and Recovery (CalRecycle) reports that "In 2021, Mexico was the largest importer of scrap plastics from California, receiving more than 43 thousand tons via truck and rail." CALRECYCLE, *2021 State of Disposal and Recycling Report* (Dec. 2022) at 2, https://www2.calrecycle.ca.gov/Publications/Download/1890 (submitted herewith).

[94] Contamination includes "pizza boxes blotched with cheese and grease, plastic wrappers for food, shredded paper, unclean jelly jars, broken glass, unrinsed bottles and newspapers that have lined bird cages. Even paper envelopes with plastic address windows." George Skelton, *Environmentally Minded Californians Love To Recycle—But It's No Longer Doing Any Good*, L.A. TIMES (July 9, 2018), https://www.latimes.com/politics/la-pol-sac-skelton-recycling-problems-california-20180709-story.html. According to Recology, a San Francisco Bay Area recycler, "There's no market for a lot of stuff in the blue bin. What we can't recycle we take to a landfill." *Id.* One problem is mixed paper—newsprint, magazines, junk mail. "China no longer wants it. So it's being sold to smaller markets in India, Vietnam and other Southeast Asian countries" (*id.*), with disastrous results. *See, e.g.*, K. Oanh Ha, *Amazon Packages Burn in India: Final Stop in Broken Recycling System*, BLOOMBERG (Dec. 27, 2022), https://www.bloomberg.com/features/2022-india-plastic-recycling-pollution/ (article submitted herewith) (submitted herewith). "Plastic bags and items made from their plastic material (i.e. shrink wrap, bubble wrap, plastic bags, newspaper bags, trash bags, etc.) are the worst recycling contaminator of all." David Rachelson, *What Is Recycling Contamination, and Why Does It Matter?* RUBICON (Feb. 6, 2023), https://www.rubicon.com/blog/recycling-contamination/.

[95] For example, consumer confusion caused in part by misleading or untrue "recyclable" claims required Massachusetts to develop a program to re-educate residents about which items should never go in recycling bins, such as plastic films (which damage material recovery facility (MRF) equipment), black plastic (which is not readable by MRF optical sorters), and colored single-use plastic cups (which are made of low value, unmarketable plastic). *See* "Recyclopedia" search results for "plastic bag," "black plastic (i.e. takeout trays)," and "cup colored plastic," respectively, https://recyclesmartma.org/faq/; https://recyclesmartma.org/results-materials/#!rc-page=wizard_results&rc-data-q=plastic%20bags.

and the cost of managing this situation is driving many communities to reduce or suspend their recycling programs.[96]

The upshot of this "perception gap" is that consumers are routinely misled about the lifecycle benefits of purchasing "recyclable" products. This ongoing deception undermines the intent of the Green Guides to provide consumers with truthful and reliable information. It also undercuts the benchmark for any environmental marketing claim—that an item labeled with such a claim will deliver an *actual environmental benefit*. Any consumer item labeled "recyclable" that is not being recycled via existing infrastructure accessible to the consumer delivers no such benefit.

Revisions are necessary to make explicit the FTC's intent and the meaning of the term "recyclable."

To reduce the great consumer deception that Chair Khan acknowledges in her statement, we urge the FTC to adopt revised guidance for use of the term "recyclable" that eliminates the gap between what consumers think recyclable means and what marketers promote as minimally sufficient to substantiate a recyclability claim.

Litigation over the meaning of recyclable marketing claims often turns on whether marketers have complied with the Guides' parameters for use of this term.[97] Some courts have endorsed marketers' typical argument that "recyclable . . . merely describes a condition whereby an item has the capability of being recycled."[98] A New York court recently observed:

> Inasmuch as the Green Guides' focus is explicitly on the availability and existence of recycling programs and collection sites, whether a recyclability claim is misleading turns not on the incidence of recycling, but whether a substantial majority of consumers can place such products into the recycling stream."[99]

However, mere access to a recycling bin or drop-off site does not mean that items collected will be recycled,[100] illustrating how a focus on access alone does not meet consumers' expectations.

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[96] REDUCE, REUSE, CONFUSE at 11.
[97] *See, e.g.*, Duchimaza v. Niagara Bottling, No. 21 Civ. 6434 (PAE), 2022 WL 3139898, at *9 (S.D.N.Y, Aug. 5, 2022); Swartz v. Coca-Cola Co., No. 21-cv-04643-JD (N.D. Cal. Nov. 18, 2022); Bargetto v. Walgreen Co., No: 3:22-cv-02639-TLT, 2022 WL 18539360 (N.D. Cal. filed Apr. 29, 2022).
[98] *See* Bargetto v. Walgreen Co., 2022 WL 18539360; Curtis v. 7-Eleven, Inc., No. 21-cv-6079, 2022 WL 4182384, at *12 (N.D. Ill. Sept. 13, 2022) ("The plain meaning [of recyclable] is straightforward. 'Recyclable' simply means 'capable of being recycled.'").
[99] Duchimaza v. Niagara Bottling, 2022 WL 3139898, at *9 (S.D.N.Y, Aug. 5, 2022) (emphasis added).
[100] The Sustainable Packaging Coalition noted that "there may be misalignment between the types of items communicated for acceptance in collection programs and the types of items that are targeted for recycling in downstream elements of the recycling process. Many communities

Measuring consumer deception by the degree of availability of recycling collection facilities would be a poor proxy for actual recycling and, as Chair Khan noted, consumers continue to be deceived and confused. Rather, the Green Guides should more explicitly focus on the question consumers really want answered: If I *do* place this product or package in a recycling bin, will it actually be recycled?

Additionally, the revised Green Guides should further clarify that "recycling" of post-consumer plastic is confined to the mechanical processing of plastic waste into a new product or into plastic resin that can be used as feedstock for making a new plastic product.[101] Facilities that convert post-consumer plastic waste into fuels or other products that are combusted or used for energy generation should not qualify as a "recycling program" for purposes of compliance with the Guides, because it is questionable whether such programs provide any environmental benefit.[102] Even the plastic industry agrees that conversion of plastic waste to fuel is not "recycling."[103] These processes may be more accurately described as chemical pyrolysis, gasification, or incineration, and may have more adverse environmental impacts than benefit.[104]

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operate their recycling programs by engaging waste haulers with contracts that specify the packaging types that must be accepted for collection. Those haulers are contractually obligated to collect certain items, but the MRFs that serve as the destinations for those collected items may not be contractually obligated to sort and sell them." SUSTAINABLE PACKAGING COAL., 2020-2021 CENTRALIZED STUDY ON AVAILABILITY OF RECYCLING 10 (2022) https://sustainablepackaging.org/wp-content/uploads/2022/03/UPDATED-2020-21-Centralized-Study-on-Availability-of-Recycling-SPC-3-2022.pdf (submitted herewith). Moreover, this study found that only 59.5% of Americans have access to curbside recycling. *Id*. at 12. Drop-off sites may provide another access point to recycling, but other studies show the relevance of such access to consumers is limited. *See, e.g.*, Clarissa Morawski & Jason Wilcox, *Is Access Everything?*, RES. RECYCLING (Mar. 20, 2017), https://resource-recycling.com/recycling/2017/03/10/is-access-everything/ ("A review of participation studies over eight years in Arkansas, Massachusetts, Michigan and North Carolina found that participation in drop-off programs was between 9 and 15%") (submitted herewith).

[101] The EPA has defined the recycling process to have essentially three main steps: collection, processing, and remanufacturing into a new product. U.S. ENV'T PROT. AGENCY, *U.S. Recycling System Overview* (Nov. 15, 2022), https://www.epa.gov/recyclingstrategy/us-recycling-system. *See also* IVY SCHLEGEL, DECEPTION BY THE NUMBERS: AMERICAN CHEMISTRY COUNCIL CLAIMS ABOUT CHEMICAL RECYCLING INVESTMENTS FAIL TO HOLD UP TO SCRUTINY 7 (2020), https://www.greenpeace.org/usa/wp-content/uploads/2020/09/GP_Deception-by-the-Numbers-3.pdf.

[102] *See* NAT. RES. DEF. COUNCIL, *supra* note 82, at 8.

[103] SCHLEGEL, *supra* note 101, at 4.

[104] A. ROLLINSON AND J. OLADEJO, CHEMICAL RECYCLING: STATUS, SUSTAINABILITY, AND ENVIRONMENTAL IMPACTS. GLOBAL ALLIANCE FOR INCINERATOR ALTERNATIVES (2020), at 17-29, www.no-burn.org/cr-technical-assessment (submitted herewith). *See also* DENISE PATEL ET AL., *ALL TALK AND NO RECYCLING: AN INVESTIGATION OF THE U.S. "CHEMICAL RECYCLING"*

The conversion of plastic waste into polymers, resins, feedstocks, chemicals, waxes, and other non-fuel products through processes such as advanced, chemical, or molecular recycling, using methods such as gasification, pyrolysis, chemical depolymerization, solvent-based processing, or other non-mechanical means, should not qualify as a recycling program unless and until those processes are proven to be as efficient as mechanical recycling in yielding a useable product, and are shown to have an *actual environmental benefit*.

As the California Commission on Recycling Markets and Curbside Recycling has noted, there is an urgent need to "restore the public trust that when items are correctly placed in a recycling . . . bin, those materials *are recovered* in a legal and responsible manner."[105] To more explicitly reflect the FTC's clear intent to ensure that consumer items labeled "recyclable" are actually recycled, the Green Guides should be revised to require that an item marketed as "recyclable" is of the type that is routinely and actually recycled through a mechanical process that reconstitutes it into a new item, or into raw material used to manufacture a new item.

Proposed revisions to § 260.12

To those ends, we propose the following changes and clarifications to the focus, definitions and structure of the recycling section of the Green Guides.

§ 260.12 Recyclable claims.

(a) It is deceptive to represent, directly or by implication, that a product or package is recyclable unless when discarded by the consumer through an established recycling program, it meets the criteria in this section.

(b) Marketing an item using an unqualified recyclable claim is permissible only if the item is routinely recycled in X%[106] of established recycling programs within the geographic regions where the item is sold.

INDUSTRY 3 (2020), https://www.no-burn.org/wp-content/uploads/All-Talk-and-No-Recycling_July-28.pdf; SCHLEGEL, *supra* note 101, at 3–4; Joe Brock et al., *The Recycling Myth: Big Oil's Solution for Plastic Waste Littered with Failure*, REUTERS (Jul. 29, 2021), https://www.reuters.com/investigates/special-report/environment-plastic-oil-recycling/.

[105] CAL. STATEWIDE COMM'N ON RECYCLING MKTS. & CURBSIDE RECYCLING, POLICY RECOMMENDATIONS 5 (2021), https://www2.calrecycle.ca.gov/Docs/Web/119460.

[106] We encourage the FTC to set this percentage as high as reasonably possible to ensure consumers are not misled or deceived by "recyclable" marketing claims. The states of Oregon, Massachusetts, and Rhode Island, and the District of Columbia urge the FTC to adopt 90% for this threshold.

(1) For purposes of this part, "recycled" means the product or package is reconstituted into a new product or processed for use in manufacturing or assembling another product.

(2) Conversion of plastic waste into fuel or another product that is ultimately combusted or used for energy generation does not qualify as a recycling program or a new "product" for purposes of this section.

(3) Conversion of plastic waste into polymers, resins, feedstocks, chemicals, waxes, and other non-fuel products through processes such as advanced, chemical, or molecular recycling, using methods such as gasification, pyrolysis, chemical depolymerization, solvent-based processing, or other non-mechanical means, does not qualify as a recycling program or as reconstituting plastic waste into a new or recycled product for purposes of this section.

(c) When a marketer does not have substantial evidence that a product or package meets the conditions specified in (a) and (b)—

(1) an unqualified recyclable claim for that item, whether explicit or implied, is deceptive;

(2) a qualified recyclable claim must state: "NOT ROUTINELY RECYCLED—Please check with your local jurisdiction."

(d) If any component of the product or package significantly limits the ability to recycle the item, any recyclable claim would be deceptive. An item that is made from recyclable material, but, because of its shape, size, or some other attribute, is not recycled, should not be marketed as recyclable.

We also propose the FTC modify the examples to conform to the revisions, as illustrated below:

Example 1: A nationally sold product container is marked "recyclable." Only 50 percent of such product containers collected through established recycling programs nationwide are recycled within the meaning of § 260.12. An unqualified recyclable claim on this product container is deceptive.

Example 2: A packaged product is labeled with an unqualified claim, "recyclable." It is unclear from the type of product and other context whether the claim refers to the product or its packaging. Unless the marketer has substantiation that both the product and its packaging are recycled in accordance with § 260.12(a) and (b), it should clearly and prominently qualify the claim in accordance with § 260.12(c).

Example 3*:* A nationally marketed plastic yogurt container displays the Resin Identification Code (RIC) (which consists of a design of arrows in a triangular shape containing a number in the center and an abbreviation identifying the component plastic resin) on the front label of the container, in close proximity to the product name and logo. This use of the RIC constitutes an unqualified recyclable claim. Unless the item is recycled in accordance with § 260.12(a) and (b), the claim is deceptive. To avoid deception, the RIC should be placed in an inconspicuous location (e.g., embedded in the bottom of the container), where it would not constitute a recyclable claim.

Example 4: A container can be burned to produce heat and power, however it is not recycled in accordance with § 260.12(a). Any claim that the container is recyclable is deceptive.

Example 5: A paperboard package is marketed nationally and labeled either "Recyclable where facilities exist," or "Recyclable. Check to see if recycling facilities exist in your area." Programs that recycle these packages within the meaning of § 260.12 exist only in a few areas where the item is sold. Both of these qualified claims are deceptive because they do not clearly state "NOT ROUTINELY RECYCLED—Please check with your local jurisdiction" in accordance with § 260.12(c).

Example 6: A package is labeled "Includes some recyclable material." The package is composed of four layers of different materials, bonded together. One of the layers is made from recyclable material, but the others are not. Only a few recycling programs have the capability to separate the recyclable layer from the non-recyclable layers. The claim is deceptive.

Example 7: A product container is labeled "recyclable." The marketer advertises and distributes the product only in Missouri. An unqualified claim is not deceptive if the container is recycled in the state of Missouri in accordance with § 260.12(a) and (b).

Example 8: A manufacturer of one-time use cameras labels them "Recyclable through our dealership network." The manufacturer operates a take-back program that collects those cameras through all of its dealers, and reconditions them for resale. This claim is not deceptive, even though the cameras are not recyclable through conventional curbside or drop-off recycling programs.

Example 9: An aluminum can is labeled "Please Recycle." This statement conveys that the can is recyclable. If these cans are recycled in accordance with § 260.12(a) and (b), the marketer does not need to qualify the claim.

5. Renewable Energy Claims, § 260.15

In its request for public comment, the FTC did not specifically ask for input on renewable energy claims. However, ensuring the integrity of such claims is vital to supporting the development of renewable energy. We urge the FTC to revise the standards applicable to renewable energy

claims to ensure that they are consistent with consumers' expectations that a renewable energy claim is underwritten by actual environmental benefit. Specifically, the FTC should protect consumers' expectations by removing the "renewable energy certificate" or "REC" exception from the Guides and requiring that marketers who make renewable energy claims are actually procuring and using renewable energy.

Consumers reasonably expect that purchases of products or services with "Renewable Energy" claims benefit renewable energy, not non-renewable energy.

When consumers purchase products or services backed by renewable energy claims, the consumers "likely care about whether their purchase supports renewable energy."[107] However, the Green Guides presently allow renewable energy claims that subvert this reasonable consumer expectation. Currently under the Guides, a marketer can make an unqualified renewable energy claim when relying on non-renewable energy, such as that from fossil fuel, if the marketer pairs the non-renewable energy use with a renewable energy certificate ("REC").[108] This practice deceives consumers who believe they are supporting renewable energy with their purchases, when in fact they are not, because for reasons discussed below, RECs alone do not support renewable energy and instead can harm the renewable energy industry.[109]

RECs that are unbundled from renewable energy do not benefit renewable energy.

RECs represent the renewable attributes of renewable energy but do not represent the energy itself. RECs can either be bundled or unbundled. A bundled REC is transferred in tandem with its underlying renewable energy. An unbundled REC is transferred independently and is severed from the underlying renewable energy that created the REC's renewable attributes. The "REC exception" in § 260.15 is effectively an unbundled REC exception. A marketer rarely, if ever, pairs non-renewable energy use with bundled RECs, since doing so would result in the marketer paying for double the energy that the marketer needs. Rather, the marketer can and will choose the cheaper and simpler unbundled RECs.

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[107] FTC Statement at 223.
[108] 16 C.F.R. 260.15(a), 260.15(c) (2023).
[109] *See* Anders Bjørn et al., *Renewable Energy Certificates Threaten the Integrity of Corporate Science-Based Targets*, 12 NATURE CLIMATE CHANGE 539-46 (June 9, 2022), https://www.nature.com/articles/s41558-022-01379-5 (submitted herewith). RECs alone do not provide additionality to the renewable energy industry in the form of additional generation or capacity. *Id. See also* Michael Gillenwater et al., *Additionality of Wind Energy Investments in the U.S. Voluntary Green Power Market*, 63 RENEWABLE ENERGY 452–57 (Mar. 2014), https://www.sciencedirect.com/science/article/abs/pii/S0960148113005338 (submitted herewith).

Unbundled RECs, however, do not support renewable energy and are likely detrimental to the renewable energy industry,[110] primarily because they do not provide adequate financing directly to renewable energy projects to sustain further renewable energy generation.[111] Unlike bundled RECs—which often are included in greater financing packages, like Power Purchase Agreements, that secure long-term, stable, and substantial cash flow for developing renewable energy projects—, unbundled RECs are not tied to any particular project.[112] Unbundled RECs are transferred quickly and inexpensively across borders from locales where renewable energy deployment has outpaced demand,[113] and there is no guarantee that the purchase of an unbundled REC results in the actual use of the underlying renewable energy. The abundance of unbundled RECs lowers their value and creates a disincentive for marketers wishing to make renewable energy claims to pay the higher price for the actual purchase and use of renewable energy. Thus, unbundled RECs undercut—not support—the existence and future generation of renewable energy.

State regulators have recognized the problem with relying on unbundled RECs to make representations of renewable energy use and have begun to disallow the practice. In 2020, the California Energy Commission ("CEC") updated its Power Source Disclosure Program regulations to exclude unbundled RECs from electricity providers' calculations of fuel mix or GHG emissions.[114] The CEC determined that unbundled RECs do not represent the renewable electricity that a utility delivers and a consumer uses. Thus, the CEC excluded unbundled RECs from allowable representations of renewable energy use.

The Green Guides presently allow unbundled RECs to be paired with non-renewable energy

The FTC declined to advise against the use of RECs when issuing guidance on renewable energy in 2012, because the FTC found that "[n]o evidence on the record suggests that a contract-based system more reliably tracks renewable energy than a well-designed REC-based system."[115] The FTC also declined to advise against using unbundled RECs to make renewable energy claims,

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[110] Matthew Brander et al., *Creative Accounting: A Critical Perspective on the Market-Based Method for*
Reporting Purchased Electricity (Scope 2) Emissions, 112 ENERGY POL'Y 29, 30-32 (Jan. 2008), https://www.sciencedirect.com/science/article/pii/S0301421517306213 (submitted herewith).
[111] Bjørn et al., *supra* note 109.
[112] *Id.*
[113] *See* U.S. ENV'T PROT. AGENCY, *Green Power Pricing, Renewable Energy Certificates (RECs)* (Feb. 5, 2023), https://www.epa.gov/green-power-markets/green-power-pricing.
[114] "Unbundled RECs, including those from a non-eligible renewable energy resource shall not be used to calculate or adjust the fuel mix or GHG emissions intensity of an electricity portfolio." California Energy Commission's Power Source Disclosure Program, Accounting Methodology, CAL. CODE REGS., tit. 20, § 1393(a)(1) (2023).
[115] FTC Guides, 75 Fed. Reg. 63,552, 63,592 (proposed Oct. 10, 2010).

because the FTC suggested that "[t]here is no evidence that unbundled RECs [support renewable energy] any less than direct purchases of renewable energy."[116]

More than a decade since the last update to the Guides, it has become clear that RECs alone do not support renewable energy and that unbundled RECs can actually harm the renewable energy industry. The FTC should accordingly narrow its guidance in § 260.15 to eliminate the REC exception for marketers who use non-renewable energy. Consumers should get what they expect when they purchase products or services backed by renewable energy claims: that the purchases benefit renewable energy, because the marketers actually bought and used renewable energy.

Proposed Revisions to § 260.15

Below, we propose specific changes to the existing language of § 260.15, to address the issues identified above:

(a) It is deceptive to misrepresent, directly or by implication, that a product or package is made with renewable energy or that a service uses renewable energy. A marketer should not make unqualified renewable energy claims, directly or by implication, if fossil fuel, or electricity derived from fossil fuel, is used to manufacture any part of the advertised item or is used to power any part of the advertised service~~, unless the marketer has matched such non-renewable energy use with renewable energy certificates~~.

…

(c) It is deceptive to make an unqualified "made with renewable energy" claim unless all, or virtually all, of the significant manufacturing processes involved in making the product or package are powered with renewable energy ~~or non-renewable energy matched by renewable energy certificates~~. When this is not the case, marketers should clearly and prominently specify the percentage of renewable energy that powered the significant manufacturing processes involved in making the product or package.

~~Example 3: An automobile company uses 100% non-renewable energy to produce its cars. The company purchases renewable energy certificates to match the non-renewable energy that powers all of the significant manufacturing processes for the seats, but no other parts, of its cars. If the company states, "The seats of our cars are made with renewable energy," the claim would not be deceptive, as long as the company clearly and prominently qualifies the claim such as by specifying the renewable energy source.~~

[116] FTC Statement at 223.

Additional Suggested Updates to § 260.15

To ensure the Green Guides remain a critical resource for consumers of renewable energy, the FTC should also update the Green Guides to account for recent, significant changes in the renewable energy markets. More specifically, the FTC should expand § 260.15 of the Green Guides to explicitly encompass claims of renewable, clean, or green gas in the marketing of fossil gas and alternatives to fossil gas.

With climate change a paramount world issue, many jurisdictions across the United States have set forth decarbonization goals that require reduced use of fossil fuels in the building and transportation sectors.[117] For example, Massachusetts has set a net-zero greenhouse emissions mandate by 2050.[118] To achieve this end, the Commonwealth seeks to reduce fossil fuel use in the residential building sector by 95% from its 1990 baseline.[119] In response, local gas distribution companies and other fossil fuel heating vendors (e.g., oil and propane dealers) are actively looking for opportunities to maintain their business model through the introduction of fossil fuel alternatives for use in the building heating sector, e.g., renewable natural gas, green hydrogen, synthetic natural gas, or other biofuels.[120]

Greenwashing marketing tactics and claims are likely to proliferate as many jurisdictions adopt laws to reduce the use of fossil fuels and fossil gas. Currently, gas distribution companies often market natural gas as more efficient, better for the environment, and clean. These statements are without qualification or substantiation and could be misleading to a reasonable consumer,[121] particularly at a time when there is continual media focus on climate change and decarbonizing heating in buildings.

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[117] *See, e.g.*, MASS. EXEC. OFF. ENERGY & ENV'T AFFS., CLEAN ENERGY AND CLIMATE PLAN FOR 2050 (Dec. 2022), https://www.mass.gov/doc/2050-clean-energy-and-climate-plan/download (setting forth a broad suite of specific goals, strategies, policies, and actions to reduce statewide gross GHG emissions by at least 85% below the 1990 baseline level and conserve and enhance carbon sequestration on natural and working lands to help achieve net-zero in 2050).

[118] *See* An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy, 2021 Mass. Acts 2021, Ch. 8, https://malegislature.gov/Laws/SessionLaws/Acts/2021/Chapter8 (requiring statewide limits and sector specific sub-limits to maximize the Commonwealth's ability to achieve net-zero in 2050).

[119] *See* MASS. EXEC. OFF. ENERGY & ENV'T AFFS., *supra* note 117, at xii.

[120] *See, e.g.*, Investigation by the Department of Public Utilities into the role of Gas Local Distribution Companies as the Commonwealth Achieves Its Target 2050 Climate Goals, D.P.U. 20-80, Local Gas Distribution Companies Net Zero Enablement Filings (Mar. 18, 2022), https://eeaonline.eea.state.ma.us/DPU/Fileroom/dockets/bynumber/20-80 (presenting plans to introduce renewable natural gas and green hydrogen into the distribution system).

[121] For example, consumers may wonder: Cleaner than what alternative? Better for the environment than what alternative? Is natural gas the most climate friendly option?

The Office of the Massachusetts Attorney General[122] ("MA AGO") recently relied on § 260.15(d), Example 5 in discussions with a local natural gas distribution company seeking to acquire biomethane produced at a local landfill and market it to its customers as "renewable" natural gas. The landfill gas facility, however, retained the renewable attributes associated with the biomethane production. Referring to Example 5, by analogy, the MA AGO reasoned that the local distribution company forfeited the ability to market the biomethane as renewable because it did not retain the renewable attributes.[123]

This same distribution company marketed renewable natural gas, on its website, as "cleaner" than fossil gas, without any qualifications or substantiation. Relying on § 260.15(b), which notes that marketers should qualify their renewable claims absent substantiations for all their express and reasonably implied assertions, the MA AGO contended that the company's webpage constituted unfair and deceptive marketing practices under the Massachusetts consumer protection laws. The company took down the webpage shortly after learning of the MA AGO's concern.

Similarly, the California Attorney General ("CA AGO") recently relied on § 260.15(a) in determining that a natural gas producer violated state consumer protection laws by claiming that natural gas is "renewable." That section provides, among other things, that a marketer should not make unqualified renewable energy claims if fossil fuel is used to manufacture any part of the advertised item. And § 260.15(c), in turn, provides, "It is deceptive to make an unqualified 'made with renewable energy' claim unless all, or virtually all, of the significant manufacturing processes involved in making the product or package are powered with renewable energy or non-renewable energy matched by renewable energy certificates." In fact, only a small fraction (less than 5% at the time) of the company's natural gas portfolio was derived from biomethane (and could thus be deemed "renewable"); the remaining natural gas sold by the company, including the gas sold to residential consumers, was derived from fossil fuel. The CA AGO asserted that this was not "all, or virtually all" of the marketed product.

The current provisions thus served the purpose of providing a workable standard for finding the natural gas producer's claims deceptive, but the Green Guides should address fuel marketing more directly. The growing marketing of these alternative fuels presents significant and continued opportunity for unfair and deceptive marketing practices. Consumers looking to the Green Guides for assistance would not find any specific guidance when navigating these types of

[122] The Massachusetts Consumer Protection Laws authorize the Massachusetts Attorney General to promulgate rules and regulations interpreting the provisions of the consumer protection statute but require any rule or regulation to be consistent with the interpretations given to the corresponding federal law (15 U.S.C. § 45(a)(1)) by the FTC and federal Courts. MASS. GEN. LAWS ch. 93A, § 2 (2023).

[123] *See* Liberty Utilities (New England Natural Gas Company) Corp. d/b/a Liberty, D.P.U. 22-32, Initial Brief of the Office of the Attorney General, pp. 13-17 (Sept. 16, 2022), https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/15504707. Further, as noted above, the developer is retaining an unbundled REC that, under the current guidance, can be paired with non-renewable energy to market the energy as renewable.

marketing claims. We therefore recommend the FTC expand § 260.15 to specifically address claims of renewable, clean, or green gas and/or fuels in the marketing of fossil fuels, fossil gas and alternatives to fossil fuels and fossil gas.

CONCLUSION

We appreciate the opportunity to submit these comments and hope the FTC will consider them in determining whether and how to revise the Green Guides for the next ten years.

Sincerely,

FOR THE STATE OF CALIFORNIA

ROB BONTA
Attorney General

s/ *Liz Rumsey*
LIZ RUMSEY
RAISSA LERNER
BRIAN CALAVAN
Deputy Attorneys General
1515 Clay Street, 20th Floor
Oakland, CA 94612
(510) 879-0860
liz.rumsey@doj.ca.gov

FOR THE STATE OF CONNECTICUT

WILLIAM TONG
Attorney General of Connecticut

s/ *Kaelah M. Smith*
Kaelah M. Smith
Assistant Attorney General
165 Capitol Avenue
Hartford, CT 06106
(860) 808-5250
kaelah.smith@ct.gov

FOR THE STATE OF DELAWARE

KATHLEEN JENNINGS
Attorney General

s/ *Vanessa Kassab*
VANESSA KASSAB
Deputy Attorney General
Office of Impact Litigation and Tobacco Enforcement
Delaware Department of Justice
(302) 683-8881
vanessa.kassab@delaware.gov

FOR THE STATE OF ILLINOIS

KWAME RAOUL
Attorney General

s/ *Elizabeth Dubats*
ELIZABETH DUBATS
Assistant Attorney General
MATTHEW J. DUNN
Chief, Envi. Enf./Asbestos Litig. Div.
Office of the Attorney General
Environmental Bureau
69 W. Washington St.
18th Floor Chicago, IL 60602
(312) 814-2069
Elizabeth.Dubats@ilag.gov

FOR THE COMMONWEALTH OF MASSACHUSETTS

ANDREA JOY CAMPBELL
ATTORNEY GENERAL

/s/ Tracy L. Triplett
TRACY L. TRIPLETT
I. ANDREW GOLDBERG
Assistant Attorneys General
Environmental Protection Division
ELIZABETH ANDERSON
Deputy Division Chief
JO ANN BODEMER
Assistant Attorney General
Energy and Telecommunications Division
One Ashburton Place, 18th Floor
Boston, MA 02108
(617) 963-2431
tracy.triplett@mass.gov

FOR THE STATE OF MARYLAND

ANTHONY G. BROWN
Attorney General

s/ *Steven J. Goldstein*
STEVEN J. GOLDSTEIN
Special Assistant Attorney General
Office of the Attorney General
200 Saint Paul Place
Baltimore, Maryland 21202
410-576-6414
Sgoldstein@oag.state.md.us

FOR THE STATE OF MICHIGAN

DANA NESSEL
Attorney General

/s/ *Elizabeth Morrisseau*
ELIZABETH MORRISSEAU
Assistant Attorney General
Environment, Natural Resources, and
Agriculture Division
6th Floor G. Mennen Williams Building
525 W. Ottawa Street
P.O. Box 30755
Lansing, MI 48909
Tel: (517) 335-7664
Email: MorrisseauE@michigan.gov

FOR THE STATE OF MINNESOTA

KEITH ELLISON
Attorney General

/s/ Joseph T. Heegaard
JOSEPH T. HEEGAARD
Special Assistant Attorney General
Minnesota Attorney General's Office
445 Minnesota Street, Suite 1400
St. Paul, MN 55101
Telephone: (651) 583-6667
Email: joseph.heegaard@ag.state.mn.us

FOR THE STATE OF NEW JERSEY

MATTHEW J. PLATKIN
Attorney General

/s/ Rachel Manning
RACHEL MANNING
LISA J. MORELLI
Deputy Attorneys General
New Jersey Division of Law
25 Market St.
Trenton, New Jersey 08625
(609) 376-2745
Rachel.Manning@law.njoag.gov

FOR THE STATE OF NEW MEXICO

RAUL TORREZ
Attorney General

s/ William Grantham
WILLIAM GRANTHAM
Assistant Attorney General
408 Galisteo Street
Santa Fe, NM 87501
(505) 717-3520
wgrantham@nmag.gov

FOR THE STATE OF NEW YORK

LETITIA JAMES
Attorney General

/s/ Ashley M. Gregor
ASHLEY M. GREGOR
Assistant Attorney General
MICHAEL J. MYERS
Senior Counsel
Environmental Protection Bureau
New York State Office of the Attorney General
28 Liberty Street
New York, NY 10005
(212) 416-8454
Ashley.Gregor@ag.ny.gov
Michael.Myers@ag.ny.gov

FOR THE STATE OF OREGON

ELLEN F. ROSENBLUM
Attorney General

/s/ Paul A. Garrahan
PAUL A. GARRAHAN
Attorney-in-Charge
STEVE NOVICK
Special Assistant Attorney General
Natural Resources Section
Oregon Department of Justice
1162 Court Street NE
Salem, OR 97301
(503) 947-4540
Paul.Garrahan@doj.state.or.us
Steve.Novick@doj.state.or.us

FOR THE COMMONWEALTH OF PENNSYLVANIA

MICHELLE HENRY
Attorney General

s/ *Ann R. Johnston*
ANN R. JOHNSTON
Senior Deputy Attorney General
JILL GRAZIANO
Chief Deputy Attorney General
Office of the Attorney General
Strawberry Square
14th Floor
Harrisburg, PA 17120
Email: ajohnston@attorneygeneral.gov

FOR THE STATE OF RHODE ISLAND

PETER F. NERONHA
Attorney General

s/ *Randelle L. Boots*
RANDELLE L. BOOTS
Special Assistant Attorney General
Rhode Island Office of the Attorney General
150 South Main Street
Providence, RI 02903
(401) 274-4400 ext 2122
rboots@riag.ri.gov

FOR THE STATE OF WISCONSIN

JOSHUA L. KAUL
Attorney General of Wisconsin

s/ Tressie K. Kamp
TRESSIE K. KAMP
Assistant Attorney General
Wisconsin Department of Justice
P.O. Box 7857
Madison, WI 53707-7857
(608) 266-9595
kamptk@doj.state.wi.us

FOR THE DISTRICT OF COLUMBIA

BRIAN L. SCHWALB
Attorney General

s/ Lauren Cullum
LAUREN CULLUM
Special Assistant Attorney General
Office of the Attorney General
for the District of Columbia
400 6th Street, N.W., 10th Floor
Washington, D.C. 20001
Email: lauren.cullum@dc.gov

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