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Amanda Maxwell
Executive Director and Secretary
Washington Utilities and Transportation Commission
621 Woodland Square Loop SE
Lacey, WA 98503

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COMMISSION

RE: *Sierra Club Comments on Docket No. UG-210729, Consideration of whether to continue to use the Perpetual Net Present Value Methodology to calculate natural gas line extension allowances*

Dear Ms. Maxwell,

Please accept these comments submitted by Sierra Club in response to the Washington Utilities and Transportation Commission's notice of opportunity to submit comments in the above referenced docket. Sierra Club appreciates this opportunity to comment and looks forward to continuing to engage in this process.

These comments were prepared by Optimal Energy Inc., an energy efficiency consulting firm with expertise providing services to regulatory commissions, advocacy groups, and utilities across the country. These comments are submitted on behalf of Sierra Club and its more than 630,000 members, including over 25,800 members in Washington.

Sincerely,

/s/ Jessica Yarnall Loarie
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Sierra Club Comments on Gas Line Extensions in Washington State

SUMMARY OF COMMENTS

These comments are written in response to Docket No. UG-210729, which asks for input on the perpetual net present value (“PNPV”) methodology used to calculate the natural gas line extension allowance for new customers. The PNPV is essentially the net present value of a new customer’s revenue for the utility, assuming the customer stays on the gas system indefinitely. Under current policy, gas utilities will pay this amount to connect new buildings to the gas main. Any leftover amount is given back to customers to help pay for new gas-fired boilers, furnaces, and water heaters.

In these comments, we assess the history of the PNPV calculation, and find that while it was put into place with the explicit purpose of achieving environmental benefits and emissions reductions, it does not meet that purpose today. We argue that evaluating the environmental benefits of gas heat over electric resistance and oil heating is not the correct baseline for analysis. Rather, an assessment of environmental benefit and cost savings should look at the contemporary alternative to gas extensions, electric heat pumps, which produce significant carbon savings over gas-fired heat. While it was plausible to make the case that gas heating was environmentally friendly in 2016 relative to resistance electric or oil heat, changes in the technology and policy consensus in the last five years have rendered that position obsolete. Further, numerous recent Washington-specific policies ensure that carbon savings from electric heat pumps will only get more significant over time and indicate a policy priority of shrinking—not expanding—the gas system. Finally, we argue that the PNPV calculation includes no margin of error, effectively implicitly assuming that gas extensions will have an infinite life. Therefore, this methodology introduces a significant risk of creating future stranded costs and cross subsidization from existing gas customers, risks that are markedly increased given the policy direction of the state. Given these considerations, we conclude that the best course of action for Washington is a complete moratorium on new gas connections. If that is not feasible, the UTC should at a minimum end gas line extension allowances, ensuring that the new customer takes the risk of under-recovery instead of existing customers.

PNPV WAS INSTITUTED DUE TO ENVIRONMENTAL CONCERNS

In 2014, the Washington Utilities and Transportation Commission (“UTC”) opened Docket No. UG-143616 to “discuss the need for natural gas distribution infrastructure

expansion and investigate the options available to implement such expansion.”¹ The docket was opened at the encouragement of a state representative who had sponsored a bill that “would have tasked the UTC with developing proposals to finance and build the natural gas infrastructure in the State.”² The bill did not make it through the Senate, but passed in the House with bipartisan support. The bill’s sponsor asked the UTC to move forward with the concepts in the bill.

As part of this proceeding, Avista opined that changing the line extension allowance, or the amount of money new customers receive towards connecting their buildings to the gas distribution system, would encourage more new gas conversions. In these comments, Avista cites electric savings and greenhouse gas reduction as the major benefits from converting to gas.³ In 2016, Avista filed a petition formally asking to change the line extension allowance to use a PNPV calculation, which the UTC approved.

After Avista’s petition got approved, Puget Sound Energy (“PSE”) filed an updated tariff that also used the PNPV methodology, which the UTC allowed to take effect with no action beginning in March 2016.⁴ More recently, there seems to be a recognition—both by PSE and by the UTC—that the PNPV calculation should be revisited. For example, PSE’s 2021 Pathway to Beyond Net Zero Carbon by 2045, specifies “modification of tariffs and incentives to mitigate natural gas load growth including modification of line extension tariff...” as one of the strategies that is needed to reach zero carbon from gas sales.⁵ Further, the PNPV line loss extension allowance came up in PSE’s most recent rate case, and though it got approved by the full UTC, Chairman Danner dissented, saying

¹ Notice of Opportunity to File Written Comments, No. UG-143616 (Wash. Utils. & Transp. Comm’n Oct. 6, 2014), *available at* <https://apiproxy.utc.wa.gov/cases/GetDocument?docID=9&year=2014&docketNumber=143616>.

² Letter from Rep. Jeff Morris, No. UG-143616 (Wash. Utils. & Transp. Comm’n Oct. 3, 2014), *available at* <https://apiproxy.utc.wa.gov/cases/GetDocument?docID=3&year=2014&docketNumber=143616>.

³ Comments of Avista Utilities at 4-5, No. UG-143616 (Wash. Utils. & Transp. Comm’n Dec. 15, 2014), *available at* <https://apiproxy.utc.wa.gov/cases/GetDocument?docID=41&year=2014&docketNumber=143616>.

⁴ See WUTC Docket No. UG-161268.

⁵ Puget Sound Energy, *Pathway to Beyond Net Zero Carbon by 2045* at 9 (Jan. 2021), *available at* https://www.pse.com/-/media/PDFs/Press-release/7535_Pathway_to_Beyond_Net_Zero_Report.pdf?sc_lang=en&hash=B326BE9C3EED685EF33796CE0DE35CB4.

“In my view, this methodology is based on outdated assumptions and was approved in furtherance of state policy that has evolved and is no longer defensible.”⁶

Explained in more detail below, the adoption of the PNPV methodology had the impact of roughly doubling the average allowance, from \$1,920 to \$3,789.⁷ The proposal also allowed Avista to return any portion of the PNPV to the new customer as an equipment rebate for natural gas boilers and water heaters. The rebate is significant: 77% of new customers have received a rebate of over \$2,000 and another 17% received a rebate of over \$1,000.⁸ Avista requested the change, because it believed that “the PNPV methodology will provide further natural gas hookups.”⁹ The Company claimed that the change in methodology was entirely driven by an environmental concern, stated that they wanted the change purely because “natural gas is the most energy-efficient and the most environmentally friendly method to heat space and water.”¹⁰ The company stated that it “does not benefit from the added throughput associated with new natural gas benefit,” because its revenue is decoupled from volumetric sales.

THE ENVIRONMENTAL CONSENSUS IS NOW STRONGLY FOR ELECTRICIFICATION

Much has changed in the past five years, when it was generally thought that the conversion from oil, propane, or electric resistance to gas would have positive environmental and climate benefits. In that time, the cost of renewable electric resources has continued to fall faster than expected, advancements in heat pump water heaters and air source heat pumps mean that gas heating is no longer more efficient or cheaper than electric heating, and the deleterious climate impacts of gas production, transportation, and distribution have become increasingly clear. In fact, there is currently a widespread consensus that electrifying heat and hot water systems, as well as cooking and clothes dryers, is one of the first and most cost-effective priorities for decarbonization. For example, see:

⁶ Final Order, No. UG-190530 at 209 (Wash. Utils. & Transp. Comm’n July 8, 2020), *available at* <https://apiproxy.utc.wa.gov/cases/GetDocument?docID=602&year=2019&docketNumber=190530>.

⁷ Petition of Avista Corporation, No. UG-152394 (Wash. Utils. & Transp. Comm’n Dec. 16, 2016), *available at* <https://apiproxy.utc.wa.gov/cases/GetDocument?docID=11&year=2015&docketNumber=152394> [hereinafter “Petition of Avista Corporation”].

⁸ Avista Natural Gas Line Allowance Program Semi-Annual Report No. 6 at 3, No. UG-152394 (Wash. Utils. & Transp. Comm’n Mar. 25, 2019), *available at* <https://apiproxy.utc.wa.gov/cases/GetDocument?docID=47&year=2015&docketNumber=152394>.

⁹ Petition of Avista Corporation at 6.

¹⁰ *Id.* at 10.

1. California’s decarbonization pathway analysis, that finds electrification the second priority pathway, behind decreased efficiency.¹¹
2. An LBNL analysis that finds it possible to go to an 80% renewable grid by 2030, without increasing electric costs.¹²
3. A Stanford study that finds electrifying all heating and vehicles would reduce total energy demand by 39%, due to the higher efficiency of electric heat pumps and vehicles compared to on-site energy combustion.¹³
4. Maine’s 2020 Climate Action Plan, which targets electrifying about 50% of home heating systems by 2030.¹⁴
5. Massachusetts’ Global Warming Solutions Act Advisory Committee’s recommendation to convert about 40% of the housing stock to heat pumps by 2030.
6. A report from the Rocky Mountain Institute that finds air source heat pumps to be the lowest cost option for all new construction scenarios and many retrofit scenarios in 4 cities with varying climates.¹⁵

Given the consensus on the environmental impacts of gas relative to electric heating, and in light of recent lower costs of electric heat pumps and induction stoves, it is appropriate to re-examine Washington’s PNPV valuation for gas extension allowances, which was put into place solely for the purported environmental benefits of expanding gas access. In the remainder of these comments, we go over the PNPV approach as it relates to Washington-specific environmental policy, discuss the risks that the calculations pose to existing gas customers, and re-evaluate the analyses used by the

¹¹ E3, *California PATHWAYS: GHG Scenario Results* (Apr. 6, 2015), available at https://www.ethree.com/wp-content/uploads/2017/02/E3_PATHWAYS_GHG_Scenarios_Updated_April2015.pdf.

¹² Nikit Abhyankar et al., Goldman School of Pub. Policy, *2030 Report: Powering America’s Clean Economy* at 4-5 (Apr. 2021), available at https://energyinnovation.org/wp-content/uploads/2021/04/2030-Report-FINAL.pdf?__hstc=250831769.d428e8945875d5da9ae492e6eab3413f.1611082381329.1631889329007.1632214165063.85&__hssc=250831769.2.1632214165063&__hsfp=3488606808&hsCtaTracking=d0cd3b28-7f2e-454.

¹³ *Stanford engineers develop state-by-state plan to convert U.S. to 100% clean, renewable energy by 2050*, Stanford News, June 8, 2015, available at <https://news.stanford.edu/2015/06/08/50states-renewable-energy-060815/>.

¹⁴ *Maine Won’t Wait, A Four-Year Plan for Climate Action* at 47-48 (Dec. 2020), available at https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/MaineWontWait_December2020_printable_12.1.20.pdf.

¹⁵ Sherri Billimoria et al., RMI, *The Economics of Electrifying Buildings* (2018), available at <https://rmi.org/insight/the-economics-of-electrifying-buildings/>.

Washington utilities that show energy savings and GHG reductions from gas conversions.

We conclude by recommending that Washington consider a state-wide moratorium on new gas hookups, negating a need for any form of allowance for new gas extensions. However, in the absence of such a policy, we encourage the Washington UTC to remove any allowance for gas line extensions.

WASHINGTON POLICY WILL CREATE RAPID GRID DECARBONIZATION AND ENCOURAGES BUILDING ELECTRIFICATION

Several recent laws in Washington State dramatically increase the likelihood that the state will see significant heating electrification in the near term. First, the Clean Energy Transformation Act (“CETA”) requires utilities to eliminate coal-fired power from the State’s portfolio (accounting for around 14% of supply to the state) by 2025, become fully carbon neutral by 2030 (with 20% of generation allowed to be satisfied through credits or other offsets), and fully carbon free by 2045.¹⁶ This aggressive timeline means that the GHG benefits of electric heat over gas heat will rapidly increase over the next 25 years. As explained more below, even under today’s electricity mix in Washington State, a heat pump space or water heater provides an immediate 30%+ reduction in carbon compared to an efficient gas-fired alternative. The typical life of a gas-fired boiler¹⁷ or furnace is 25 years; by the end of the life of a new gas appliance installed today, an electric heat pump system would be entirely carbon free.

Further, CETA requires that utilities consider the Social Cost of Carbon (“SCC”), with a 2.5% discount rate, in all of their decisions. The UTC has established an SCC of \$76 per ton in 2020, and rising to \$117 (in 2020 dollars) by 2050, when a boiler or furnace installed today would reach the end of its life. An average home emits 3.2 tons of carbon from natural gas space heating, which means a new gas heating home will produce an extra \$370 in annual costs from the SCC by the end of its lifetime—costs that utilities must now consider when evaluating whether gas line allowances make financial sense.

Washington has also recently produced a Deep Decarbonization Strategy, to provide a roadmap to meeting the state’s carbon goals. This study “identified a combination of energy efficiency and electrification as the least-cost strategy to meet the state’s

¹⁶ Governor Jay Inslee, *Policy Brief* (May 2019), available at <https://www.governor.wa.gov/sites/default/files/documents/clean-electricity-policy-brief-bill-signing.pdf>.

¹⁷ For clarity, all references to boilers will mean gas-fired boilers and furnaces.

greenhouse gas emissions limits for buildings.”¹⁸ It also finds that although electric requirements increase by 30% in the electrification scenario, total energy loads decrease by 26%, mostly from the higher efficiency of electric heating. Even the higher cost scenario that retained gas in buildings assumed no growth in gas use in order to achieve the state’s goals. Clearly, in light of the decarbonization goals and pathways, the UTC should not be supporting policies explicitly implemented to expand the gas system. As one of the action items from the Deep Decarbonization Strategy says: “The Legislature and the UTC should ensure that the state’s climate policy and emissions limits are reflected in the regulation of natural gas companies and explore legislative and regulatory actions to restrict growth of the natural gas system and the use of fossil natural gas where zero-emission options are available.”¹⁹ Any new gas system growth will simply undermine state environmental policy and can no longer be considered in the public interest.

The Washington legislature has also looked at HB 1084, the Healthy Homes and Clean Buildings Act. This Act would have explicitly frozen all new gas territory expansion, prohibited gas line extension allowances, required utilities to design their accounting and billing practices to align with assumption of a gas phaseout, and would have established a statewide contractor training and homeowner incentive program for building electrification.²⁰ While this bill died in appropriations committee, several of its provisions passed via the state budget, and it will likely get revived in subsequent years.²¹ It also demonstrates political appetite to eliminate line extension allowances, as well as the risk that existing gas customers convert to electric in the next 30 years.

The preponderance of state polices and guidelines requiring consideration of rapid decarbonization strategies means that rather than comparing the costs or environmental and climate benefits of gas line extensions against oil or electric resistance heat, the benchmark must be electrification and the use of efficient electric appliances. And since the incremental use of gas appliances and heat creates an incremental climate impact

¹⁸ Wash. State Dept. of Commerce, *Washington 2021 State Energy Strategy* at 67 (Dec. 2020), available at https://uploads-ssl.webflow.com/5d8aa5c4ff0274bdbe0c14b9/600b4347418372063346d074_WA_2021%20State%20Energy%20Strategy_Compressed.pdf.

¹⁹ *Id.* at 82.

²⁰ Jenny Kocher, *Washington Clean Building Bill Raises the Bar for Every State*, RMI, Feb. 5, 2021, available at <https://rmi.org/washington-clean-buildings-bill-raises-the-bar-for-every-state/>.

²¹ John McKay, *Big News – Inslee’s ‘Clean Building’ Proposal Stalls in Committee*, KFLD News Talk, Feb. 23, 2021, available at <https://newstalk870.am/big-news-inslees-clean-buildings-proposal-stalls-in-committee/>.

relative to electrification, it is imperative that new gas extensions are not justified on the basis of a climate or environmental benefit.

THE PNPV CREATES RISK FOR EXISTING GAS CUSTOMERS

The perpetual net present value is calculated by taking the net present value of a typical customer's distribution margin, discounting by the utility's tax-adjusted rate of return, and assuming that the recovery period approaches infinity. Thus, if a customer is not in fact on the gas system perpetually, the line extension allowance will not be fully covered by the customer thus becoming a stranded cost, something that will likely be of a particular consequence to low to moderate income ratepayers. Given the consensus that electrification is a key decarbonization strategy and the specific policies in Washington, it seems highly likely that people joining the gas system will leave it at some point in the future, thus putting existing customers at risk of subsidizing the line extension. Further, encouraging customers to adopt gas now will likely lock them in for the lifetime of their heating system as they will not want to incur the cost of electrification until they need to replace the gas system, further undermining state policy and plans.

More generally, the specifics of the PNPV calculation leave essentially no margin of error. The calculation makes the following assumptions:

1. New customers will stay on the system indefinitely. This is discussed above and is almost definitely not true given current Washington laws.
2. New customers will have the same approximate gas usage as existing customers. This is also likely optimistic, as new buildings are typically more efficient than existing buildings, and existing buildings converting may, for example, only convert space heat and opt for a heat pump hot water (established technology easy to install) and an induction stove top (reduces indoor air pollution). In fact, according to Avista's latest Line Extension Allowance Program ("LEAP") report, 47% of new gas customers installed a furnace alone (and not a hot water heater or stove).²² As a result, even if the customer continues to use gas in perpetuity it is likely that existing customers will end up subsidizing new customers.
3. Assumes perpetually low gas rates. Gas prices can be extremely volatile; in the last two years, wholesale gas prices have gone from a monthly low of \$1.63 to over \$6 per MMBtu as of October 2021, more than a 300% change, while in Europe prices

²² Avista Natural Gas Line Allowance Program Semi-Annual Report No. 6 at 7, No. UG-152394 (Wash. Utils. & Transp. Comm'n Mar. 25, 2019), *available at* <https://apiproxy.utc.wa.gov/cases/GetDocument?docID=47&year=2015&docketNumber=152394>.

have spiked by fivefold.^{23,24} Even outside of wholesale gas prices, and substantially more concerning are that retail rates are likely to increase substantially as customers and load migrate away from the gas system. If this happens, it will greatly strengthen the case for electrification, increasing the risk that customers will convert from gas to electric. This price “death spiral” is a major concern regarding the future of the gas system, and will particularly impact low income customers, and any new investments in expanding the system will potentially make it worse.

4. Assumes no new cost of carbon. This is also already outdated, as Washington’s cap and trade legislation does not provide allowances for new gas customers. This will also make electricity look relatively more attractive than gas, increasing the risk that convert from gas to electricity.

If any factor deviates from the idealized assumptions used in the PNPV calculation, the customer will likely not pay off their allowance, forcing other gas customers to subsidize. Because the excess allowance is returned to the customer in the form of an equipment rebate, this means that existing customers are likely subsidizing not just the extension, but also the furnaces and boilers of the new customers. We are not aware of any other jurisdictions that use the PNPV approach to calculating line extension allowances. Most at least build in some margin of error—Washington Gas Light in DC, for example, limits allowances to 80% of a 30-year net present value calculation.

ENERGY AND GHG SAVINGS CALCULATIONS RELY ON OUTDATED ASSUMPTIONS

As discussed above, the primary stated motivation for using the PNPV was to achieve the perceived energy savings and carbon reduction that would come from converting electric resistance, oil, or propane heat to gas. As such, the Washington gas utilities include estimates of energy and carbon savings from LEAP. Avista’s sixth semi-annual report, for example, shows that an average electric resistance customer uses 11,275 kWh for space and water heating, and emits 3.075 tons of carbon per year. A natural gas customer, by contrast, uses 392 therms (11,486 kWh) and emits 2.08 tons of carbon. Any analysis of GHG savings from adoption of gas should compare it against the likely alternative. Today this alternative is clearly the use of heat pumps for space and water

²³ U.S. Energy Info. Admin., Henry Hub Natural Gas Spot Price – Monthly, <https://www.eia.gov/dnav/ng/hist/rngwhhdm.htm> (accessed Oct. 25, 2021); U.S. Energy Info. Admin., Henry Hub Natural Gas Spot Price – Weekly, <https://www.eia.gov/dnav/ng/hist/rngwhhdD.htm> (accessed Oct. 25, 2021).

²⁴ Chloe Taylor, *Gas Price Surges to a Record High in Europe on Supply Concerns*, CNBC, Oct. 5, 2021, available at <https://www.cnbc.com/2021/10/05/gas-price-surges-to-a-record-high-in-europe-on-supply-concerns-.html>.

heating. Heat pumps use about 60% less electricity than electric resistance heat. Therefore, even accepting Avista's analysis, an electrified house with heat pumps for space and water heat would only emit 1.23 tons of carbon—over a 40% reduction from the gas house. In fact, Avista's assessment overestimates electric emissions, as it assumes current grid emissions rates persist. Given the requirements in CETA, the electric grid will rapidly decarbonize, and emissions from heat pumps will quickly drop, while emissions from gas heat will remain constant. By the end of its life, a heat pump will be producing essentially zero carbon, while the gas boiler and water heater will still be emitting the 2.08 tons per year calculated by Avista. It is also important to note that, while small, any system expansions will marginally increase methane leakage. Given methane is roughly 100 times more potent a greenhouse gas than carbon, any expansion further undermines climate mitigation policy.

CONCLUSION

The PNPV was first implemented in 2016 with the misguided assumption that expanding the gas system would reduce GHG emissions. Since that time, it has only become exceedingly more obvious this was not the case compared to appropriate alternatives, and to continue this policy given the current environmental consensus and official Washington policy, both of which emphasize heat pump heating combined with zero carbon electricity as one of the most important steps to decarbonize and one of Washington's primary strategies. While most decarbonization roadmaps—including Washington's 2021 State Energy Strategy—call for significant conversions of gas furnaces and boilers to heat pumps, a minimum first step should be to discourage new gas customers, whether new construction or conversion from electric resistance or oil heat. As shown above, this will create significant carbon savings in year 1, and further savings every year as the state's grid decarbonizes as required by CETA. Even without these environmental considerations, the PNPV calculation does not include any margin of error and thus creates a high risk that existing gas customers will end up subsidizing not just new line extensions, but also new customer's gas furnaces or boilers.

Given these considerations, it is very clear that PNPV no longer makes sense as a policy in Washington State. We urge a total moratorium on all new gas connections—this is the policy that most squarely fits in with the states GHG goals and the 2021 State Energy Strategy. It also reduces financial risk for gas utilities and their existing customers, especially given the high likelihood of system load migration and the likelihood of price spirals and stranded costs even without new expansions. The State's new cap and trade system and CETA's requirement that utilities consider the social cost of carbon in their decision make this future highly likely. New construction gas moratoria is being done in other states, particularly California, where at least 50 cities have adopted building codes

designed to phase out gas.²⁵ Similar policies exist in Seattle and are on the cusp of happening in other Washington cities.²⁶ However, in absence of a total moratorium, the UTC should at least eliminate all line extension allowances. This would at least force new customers who want to join the gas system to pay all the applicable costs, assume the risk of under recovery themselves, and eliminate the possibility for the extension allowance to become a stranded asset.

²⁵ Matt Gough, *California's Cities Lead the Way to a Gas-Free Future*, Sierra Club, July 22, 2021, available at <https://www.sierraclub.org/articles/2021/07/californias-cities-lead-way-gas-free-future>.

²⁶ Seattle: Rachel Schulkin, *Mayor Durkan Signs Legislation Making Seattle's Building Energy Code One of Strongest on Climate in the Nation*, Office of the Mayor (Feb. 28, 2021), available at <https://durkan.seattle.gov/2021/02/mayor-durkan-signs-legislation-making-seattles-building-energy-code-one-of-strongest-on-climate-in-the-nation/>; Shoreline: *Shoreline, WA, flexes climate leadership with steps toward clean buildings*, STAND, Aug. 23, 2021, available at <https://www.stand.earth/latest/fossil-fuel-free/shoreline-wa-flexes-climate-leadership-steps-toward-clean-buildings>; Bellingham: Ysabelle Kemp, *What one city's struggle to ban natural gas says about the challenge of electrifying buildings*, Grist, Sept. 22, 2021, available at <https://grist.org/buildings/bellingham-washington-natural-gas-ban-building-electrification/>; Tacoma: Deepa Sivarajan, *Climate Solutions, Let's Get Going on clean and safe buildings for Tacoma* (Apr. 27, 2021), available at <https://www.climatesolutions.org/article/2021-04/lets-get-going-clean-and-safe-buildings-tacoma>; King County: Dow Constantine, *Building Cleaner: Executive Constantine unveils stronger buildings codes for unincorporated King County to reduce greenhouse gas emissions and improve indoor air quality*, King County Executive Press Office (Sept. 22, 2021), available at <https://kingcounty.gov/elected/executive/constantine/news/release/2021/September/22-building-codes-to-reduce-greenhouse-gas-emissions.aspx>.