



METHANE
GUIDING
PRINCIPLES

Methane Guiding Principles Supporting Organisation Reporting

Environmental Defense Fund

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ORGANIZATION: **Environmental Defense Fund (EDF)**

YEAR OF JOINING METHANE GUIDING PRINCIPLES: **2017**

SENIOR REPRESENTATIVE: **Mark Brownstein, Senior Vice President, Energy**



Principle One:
Continually reduce methane emissions

2021 completed activity	2022 intended activity
<p>Supporting industry action on Non-Operated Joint Ventures (NOJVs)</p> <p>EDF sponsored the ‘GHG Clause Guidance’ initiative aimed at influencing the inclusion of GHG emissions reduction terms in <i>future</i> Joint Operated Agreements (JOAs). EDF worked with bp, Chevron, Eni, ExxonMobil and Shell to submit recommendations for legally binding language into a model contract for JOAs. The Association of International Petroleum Negotiators (AIPN) accepted the language and incorporated it in their draft model agreement.</p>	<p>Co-sponsor the ‘Managing and Reducing GHG Emissions’ initiative, part of the NOJV working group. The initiative aims to use the GHG model clause guidance language developed in 2021 to support GHG emissions management practices in future deals and existing NOJVs.</p>
<p>--</p>	<p>Supporting the development of tools for industry to identify methane sources and reduction strategies</p> <p>Participate in the new ‘Methane Identification and Reduction Tool’ MGP initiative. Help develop a tool that will support identification of methane sources, a range of calculation and reporting options for each source, and source-level mitigation.</p>

Principle Two:
Advance strong performance across the gas supply chain

2021 completed activity	2022 intended activity
<p>Engaging with private equity firms, and with small and mid-capitalization oil and gas companies within their portfolio</p> <p>EDF worked with U.S. Private Equity (PE) firms and their oil and gas portfolio companies on methane emission reductions. Two large virtual summits were held, covering 10 PE firms and over 50 companies.</p>	<p>Continue to engage small U.S. independents on shifting from emission factor-based approaches to direct measurement methodologies.</p> <p>Roll out new ‘Methane Identification and Reduction Tool’ with oil and gas focused private equity firms and their portfolio companies.</p>
<p>Establishing advanced technologies in the utility sector</p> <p>EDF continued to push individual utilities for expanded use of advanced leak detection technology and data analytics (ALD+) to reduce leaks from existing natural gas distribution networks and reform wholesale gas markets in the U.S. More than a dozen gas utilities have deployed ALD+ in Pennsylvania,</p>	<p>Now that ALD+ is on track to become a technology and practice for gas utility leak detection and repair programs nationwide, EDF will seek ways to promote ALD+ tool kit for additional uses, such as use in states to identify and reduce methane emissions towards meeting greenhouse gas reduction goals more accurately.</p>



<p>New York, New Jersey, Texas, Massachusetts, California, Michigan, and Illinois.</p>	<p>EDF will continue to leverage state and individual utility progress on ALD+ before the Pipeline and Hazardous Materials Safety Administration (PHMSA) to demonstrate the technology’s effectiveness.</p>
<p>Supporting the investor community as advocates for methane reduction</p> <ul style="list-style-type: none"> • EDF developed and launched the insights platform ESG by EDF that empowers investors to accelerate urgent climate action in the sectors that matter most, including oil and gas. Our first research report The Burning Question: How to Fix Flaring summarized company performance and key “asks” investors should raise on flaring. • We advised institutional investors on shareholder engagement on oil and gas methane emissions and flaring through analyst calls and webinars. This included presentations to three CA100+ investor groups on methane and flaring issues. • We published an OGMP 2.0 Investors Guide and held a webinar to discuss its importance with investors and industry stakeholders alike. • EDF leveraged data from our PermianMAP campaign to launch a campaign that activated investors representing 14 trillion dollars in assets under management to support reductions in flaring. 	<p>Collaborate with institutional investors, oil and gas industry partners, banks, and legal advisors to ensure that methane and flaring safeguards are integrated into oil and gas asset sales.</p> <p>Organize structured engagements with investors to discuss the launch of MethaneSAT and ensure that finance sector partners understand how best to integrate MethaneSAT data into investment decisions.</p>
<p>--</p>	<p>Engaging global gas buyers on methane emissions</p> <p>Collaborate with the Centre for International Studies (CSIS) to understand what forces could make the gas market evolve in a way that lowers methane emissions. The project will examine what it would take for global gas buyers to incorporate methane emissions data in their commercial strategy, transactions and financing commitments. Several reports and launch events are anticipated.</p>



Principle Three: Improve accuracy of methane emissions data

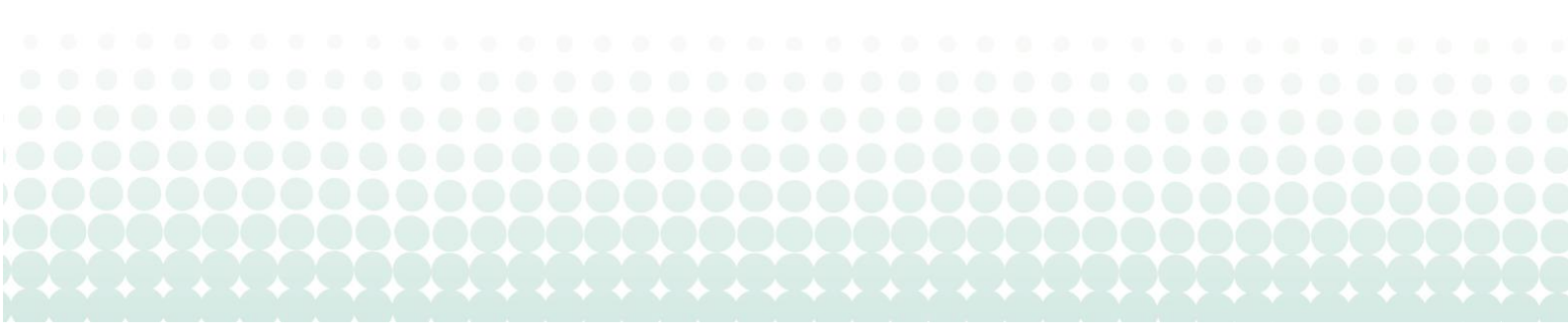
2021 completed activity	2022 intended activity
<p>Project Astra Completed testing of seven continuous methane sensor technologies in the West Texas Permian Basin in collaboration with Chevron, Exxon Mobil, Pioneer, the University of Texas and the Gas Technology Institute. Chevron, Microsoft and Schlumberger also became signatories to the project this year. The best-performing sensors will be used in a prototype next-generation monitoring network that will launch in late 2021/early 2022.</p>	<p>Evaluate the prototype next-generation monitoring network and seek verification of the technology by leading industry partners and regulators to promote uptake of technology into federal and state methane regulatory frameworks. Inform use of sensors for monitoring in other high-priority methane emissions regions globally.</p>
<p>Pathway to Equivalency Project The development phase of the project – a collaboration with bp and Colorado State University aimed at finding ways to measure and quantify emissions with greater accuracy at less cost – concluded in 2021. We communicated about the model and encouraged other industry members to generate case studies.</p>	<p>--</p>
<p>High Frequency Monitoring (HFM) standard Phase 2 of the HFM standard with the National Physical Laboratory (UK) and bp was completed. A document defining performance characteristics and criteria for measurement technologies was finalized, which aims to deliver HFM of methane emissions from industrial sites.</p>	<p>Finalize a document to share with parties, including OGMP, to help set a standard for continuous measurement of emissions.</p> <p>Support companies developing and field-testing continuous quantification technologies.</p>
<p>Permian Methane Analysis Project (PermianMAP) The second year of Permian Basin science and data initiative was completed. EDF continued strategic monitoring in the basin, successfully maintaining the visibility of the threat posed by methane emissions and collecting data to inform effective methane control policies.</p>	<p>We will continue to bring new insights from the PermianMAP project data to our dialogue with regulators and companies.</p>
<p>OGMP 2.0 EDF continued its collaboration with UNEP to ensure that OGMP 2.0 implements a robust reporting framework. We supported the drafting of technical guidance documents to assist companies in their journey towards transparent, robust, measurement-based emissions reporting as part of OGMP.</p>	<p>Continue to promote the OGMP 2.0 reporting framework, share case studies, and support activities including technical guidance, and participation on the Uncertainty Task Force and Steering Committee.</p>

<p>MethaneSAT EDF and partners continued to develop datasets on global methane emissions derived from our international studies to validate MethaneSAT data when it becomes available. We prepared a detailed, spatially explicit inventory for our Australia project, which we shared with the MethaneSAT team, along with datasets from our studies of onshore Mexico.</p>	<p>EDF subsidiary MethaneSAT will be ready to launch the world's most advanced methane-tracking satellite in a launch window that opens in October 2022.</p>
<p>Offshore methane emissions quantification study In March 2021, Neptune Energy and EDF announced an initiative to measure methane emissions from offshore oil and gas facilities. Neptune Energy granted EDF access to an offshore platform and we plan to jointly publish the data gathered. Airborne and drone platform sensors were used to identify and quantify methane emissions from facilities.</p>	<p>Publish information demonstrating to companies, governments and other stakeholders methods to quantify emissions from offshore oil and gas assets.</p>
<p>Supporting industry action on flaring Participated in the 'Flaring Toolkit' initiative and contributed technical staff time to write up information on technologies for effective measurement and monitoring of methane emissions from flares.</p>	<p>--</p>

Principle Four:

Advocate sound policy and regulations on methane emissions

2021 completed activity	2022 intended activity
<p>Supporting European Union methane policy advocacy EDF worked within an MGP subgroup to draft policy recommendations related to:</p> <ul style="list-style-type: none"> • Monitoring, Reporting & Verification (MRV) of oil and gas methane emissions • Leak Detection and Repair (LDAR) • Upstream Venting and Flaring • Addressing methane emissions from all gas consumed in the EU • Reducing methane emissions in the agricultural and waste sector <p>EDF carried out coordinated bilateral advocacy efforts with other European non-governmental organisations, business and academia to build the technical and political case to act. The European</p>	<p>Continue advocacy efforts in pursuit of creating a level playing field between domestic gas and imported gas and supporting member states in understanding the implications of the legislative proposals' technical elements.</p>



<p>Commission published a methane emissions legislative proposal in December.</p>	
<p>Defending federal progress on methane emissions in the U.S.</p> <ul style="list-style-type: none"> • EDF helped build bipartisan support for a successful effort in Congress to overturn a rollback on regulations to reduce methane pollution from new oil and gas facilities. • EDF worked with allies over many months to engage with agency and White House officials, sharing information from our scientific studies and the policy innovations that we advanced at the state level, and making available our decade of expertise to support US EPA on proposed Standards of Performance for New, Reconstructed, and Modified Sources and Emissions. • EDF facilitated an Investor and Industry Roundtable on U.S. methane regulations in support of an ambitious federal methane rule. 	<p>As EPA works towards the completion of its landmark proposal to address methane emissions from the oil and gas industry, EDF will continue to engage with EPA in support of ambitious final rules.</p>
<p>U.S. state methane regulation</p> <p>EDF led a regional coalition of diverse partners across five Western states (Colorado, North Dakota, New Mexico, Utah and Wyoming) to provide bottom-up support for federal defense efforts and accelerate state-level adoption of methane rules.</p> <p>Over the past year, significant progress was made in:</p> <ul style="list-style-type: none"> • Colorado – first state in the lower 48 to ban routine venting and flaring. • Pennsylvania, and New Mexico – finalized rules to eliminate routine venting and flaring practices at new and existing wells. 	<p>Continue advocacy efforts to accelerate state-level adoption of methane regulations.</p>
<p>COP26</p> <ul style="list-style-type: none"> • EDF, along with other environmental NGOs, hosted a Methane Pavilion for the entire duration of COP26 – calling for fast cuts in methane emissions. • Senior Climate Scientist Ilissa Ocko’s talk on the main stage about methane emissions featured at the TED climate conference, COUNTDOWN. 	<p>Operationalization of the Global Methane Pledge</p> <p>Participate in the new “Oil and Gas Sector Toolkit for the Global Methane Pledge” MGP initiative led by the International Energy Agency (IEA). The toolkit will cover both policy and technical aspects and leverage existing resources.</p>



Principle Five: Increase transparency

2021 completed activity	2022 intended activity
<p>PermianMAP data release Our first peer-reviewed study based on Permian data was published in March 2021. The analysis tracked changes in Permian emissions during an unprecedented period of economic volatility.</p>	<p>We will continue to release insights based on Permian data.</p>
<p>Methane science studies In May 2021, EDF scientists published a peer-reviewed paper showing that cutting methane emissions quickly could slow the rate of climate warming by 30%. The study highlighted how the most cost-effective emission cuts are in oil and gas.</p> <p>EDF and partners completed measurements for the third tranche of Climate and Clean Air Coalition international methane science studies:</p> <ul style="list-style-type: none"> • Norway: manuscript focusing on offshore emissions in Norway in peer review (link). • Romania: ground-based measurements in Transylvania completed to help fully characterize upstream emissions in Romania. • Caspian: significant progress made in development of drone-based measurement platform. • Mexico: paper published on Mexico onshore and offshore methane emissions. • Australia: two papers published on coal and seam gas methane emissions. 	<p>Two initial papers on ground-based measurements in Romania (currently in peer review) and two additional papers synthesizing results from all ground-based measurements as well as airborne-based measurements are forthcoming.</p> <p>Additionally, one paper on global liquefied natural gas measurements, two papers on urban gas distribution, one paper on offshore oil and gas production in the Southern North Sea as well as one paper on isotopic aerial measurements in Australia are forthcoming.</p>

