

CLIMATE **21** PROJECT

Transition Memo

Department of Energy

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This memo is part of the **Climate 21 Project**, which taps the expertise of more than 150 experts with high-level government experience, including nine former cabinet appointees, to deliver actionable advice for a rapid-start, whole-of-government climate response coordinated by the White House and accountable to the President.

The full set of Climate 21 Project memos is available at <u>climate21.org</u>.

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CLIMATE 21 PROJECT Department of Energy

Executive Summary

The Department of Energy's core climate capabilities lie in its preeminent energy research, development, demonstration, and deployment (RDD&D) programs and capabilities. These capabilities are distributed across several DOE programs, including the Office of Energy Efficiency and Renewable Energy (EERE), the Office of Science, the Office of Nuclear Energy, the Office of Electricity, and several others. To accelerate action on climate change as part of an administration-wide effort, DOE leadership will need to set a clear road map to prioritize early climate action, revitalize the research conducted by these RDD&D programs, and focus them on climate change and clean energy solutions.

Historically, the first few days of a Secretary of Energy's tenure are largely focused on detailed briefings related to nuclear security, physical security, agency threats and national security, grid infrastructure, and disaster preparedness. These recommendations outline a comprehensive strategy an incoming administration can execute to focus the agency on climate from Day One, while still meeting its responsibilities in these other important areas.

In particular, one of a new administration's key first tasks will likely be to effectively shift DOE's RDD&D focus to climate change and clean energy. To manage this shift, the incoming Secretary should immediately form a Climate Policy and RDD&D Task Force. This task force would formally bring together the Assistant Secretaries, Under Secretaries, key headquarters staff (CFO, Energy Information Administration (EIA), procurement, operations), and National Lab directors on a new venture to determine how to design and implement a broader climate strategy across all aspects and operations of the department. Bringing together the broader leadership of the department—both career and political—around a deep decarbonization strategy should permeate through all decision-making processes and strategy.

The Department of Energy also has a key role to play in addressing the global nature of the climate crisis and other energy security concerns. Combatting climate change requires global cooperation on technology, security, trade and more, beyond the diplomatic agenda that the State Department would lead. Increasingly, climate change must be mainstreamed into all of foreign policy not only as a problem to solve but as one that can affect the success or failure of other national security objectives. As a statutory member of the National Security Council, DOE has a central role to play in elevating the role of climate and energy in foreign policy issues such as security of supply, nonproliferation, energy access, trade, technology and more.

In addition, one of a new administration's first key tasks will likely be managing a major federal economic stimulus program, aimed at COVID-19 and economic recovery. To manage this influx of funds and ensure DOE programs effectively focus the new money on climate-related activities, the recommendations include standing up a short-term Climate Strike Team consisting of acting officials from key program offices and agency wide departments. This Strike Team would quickly identify any hot-button issues in the department, potentially block anti-climate actions taken by the previous administration, and quickly refocus or pause funding opportunity announcements (FOAs) that are not aligned with new administration policy. The Strike Team as envisioned would be a short-term solution, filling key management gaps while senior political appointees await Senate confirmation and more political leadership is brought into the Department.

This memo contains specific recommendations for budget, management, organization, and programming at DOE that will net short-term gains in the fight against climate change while setting the Department up to meaningfully contribute to long-term emissions reductions and scientific discovery. Recommendations in this memo also address a wide range of other DOE priorities, including restarting the DOE Appliance Standard Program, re-orienting DOE's fossil energy research program on low-carbon RDD&D, revitalizing the agency's hiring, and restoring its fundamental commitment to scientific integrity.

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TOP RECOMMENDATIONS: MANAGEMENT, BUDGET, AND STRUCTURE

- Stand up a DOE Climate and research, development, demonstration, and deployment (RDD&D) Task Force that includes Senior headquarters staff and National Laboratory Directors (*Day 1*)
- Create a Climate Strike Team to push climate action while key leadership positions are awaiting Senate confirmation (*Day 1*)
- Identify high profile and sensitive DOE projects and programs which will require early attention, such as environmental management and cleanup, disaster response plans, and grid security (*Day 1*)
- Prepare DOE to administer increased grant, loan, loan guarantee, and other programmatic expenditures potential economy recovery legislation (100 Days)
- Shape early budget requests and align budget with new climate policies including targeting a 30 percent increase in FY2022 (100 Days)
- Organize front office, management, congressional strategy, public engagement, and other departmentwide initiatives (100 Days)
- Refocus Department's commitment to scientific integrity by updating Department's mission statement and engaging directly with staff about the importance of scientific integrity (*Day 1*)
- Fix a broken hiring process by directing Management and Operations Departments to streamline hiring by identifying improvements and proposing an implementation plan (*100 Days*)

TOP RECOMMENDATIONS: KEY PROGRAM OPPORTUNITIES

- Reshape DOE's formal mission to focus more on climate change and solutions (Day 1)
- Reconstitute and rebuild the Appliance Standards Program (Day 1)
- Create cross-cutting efforts to focus RDD&D programs on lowering the cost of clean energy technologies (*Day 1*)
- Utilize DOE's unique analytical tools to support an administration-wide regulatory agenda (*Day 1*)
- Stand up a task force on international engagement to prioritize and coordinate energy and climate change diplomacy led by the Deputy Secretary (*Day 1*)
- Reshape the Fossil Energy portfolio to fit into a broader climate program (100 Days)

1 Key Agency Background

The DOE is home to approximately 14,000 federal employees and over 95,000 management and operating contractor (lab employees), along with other contractor employees at the Department's headquarters in Washington, D.C. and 83 field locations. DOE operates a nationwide system of 17 national laboratories which possess world-class scientific, technological, and engineering capabilities, including the national scientific user facilities accessed by thousands of researchers from academia, government, and industry.

- The DOE is managed by more than 20 Senate-confirmed political appointees including:
 - Secretary of Energy, Deputy Secretary, Under Secretary for Energy, Under Secretary for Science, and Under Secretary for Nuclear Security
 - Assistant Secretary for Energy Efficiency and Renewable Energy, Assistant Secretary for Electricity and Reliability, Assistant Secretary for Nuclear Energy, Assistant Secretary for Fossil Energy, Director–Office of Science, Director–ARPA-E, Assistant Secretary for Environmental Management,
 - General Counsel, CFO, Administrator–Energy Information Administration, Assistant Secretary for Congressional, Inspector General, Director–Economic Impact and Diversity, Director–Office of Civilian Radioactive Waste Management, Administrator–Energy Information Administration
 - National Nuclear Security Administration, a semi-autonomous agency headed by the Under Secretary for Nuclear Security with additional Senate-confirmed appointees not included here
- The Energy Department's total annual appropriations have ranged recently between \$25B-35B: split among nuclear security; environmental clean-up; and energy and science research, development, demonstration, and deployment.
- The Secretary of Energy also has formal roles on key White House councils including National Security Council (NSC), National Economic Council (NEC), Domestic Policy Council (DPC), and the Council on Environmental Quality (CEQ).

2 Management, Budget, and Structure

DOE will need to put significant thought, resources, and personnel toward forming thorough and defensible budget proposals. In the event that Democrats assume control of Congress, significant opportunities arise for funding in the form of an economic stimulus package. Therefore, DOE needs to be prepared with a budget proposal for Fiscal Year 2021, ideally before inauguration day, following shortly thereafter with budget requests for FY2022 and FY2023. In order to maximize the potential of DOE's energy RDD&D programs, DOE leadership will need to prioritize funding requests.

Rethinking the organizational structure within DOE will be an integral part of the plan to take concerted, effective steps on climate action. As of now, DOE has multiple vacancies across the agency that require the skill and experience of career civil servants. The DOE Chief Human Resources Officer should be given latitude to develop a new hiring process, ensuring the department can run as smoothly as possible and maintain high standards of scientific integrity throughout the organization.

An ambitious climate plan requires budget and personnel resources in order to achieve desired outcomes. Unlike EPA, which has a suite of regulatory authorities, or DOI, which manages energy resources, DOE's core climate capabilities lie in its pre-eminent energy RDD&D programs and capabilities. These are fundamentally shaped by DOE's budget proposals and Congressional appropriations. By design, this memo primarily focuses on concrete actions the Department can take through existing authorities and the typical annual appropriations levels, which remains the most likely scenario if control of Congress remains divided. However, if Democrats assume control of both the House and Senate in 2021, significant new DOE authorities and funding may be considered by Congress, particularly in the context of economic stimulus legislation.

For example, a major federal economic stimulus program—or a series of stimulus funding bills—could create significant opportunities to increase funding for existing clean energy programs and RDD&D, as well as expand clean energy tax credits and other financial incentivizes. This activity may take place early in 2021, alongside the annual budget and appropriations activities described below. In this scenario, DOE leadership's agenda in early 2021 would focus on engaging with Congress through the White House on stimulus legislation and the FY2021 and FY2022 budgets. If Congress successfully passes stimulus legislation that includes extraordinary DOE resources and new programs, the implementation of this legislation would then dominate DOE leadership's energy work for the first several years of the first term. In this scenario, we strongly recommend that DOE stand up a Climate Strike Team akin to the 2009 strike team as described in the next section.

DOE leadership will likely face four major early actions that impact the climate agenda's success and will require significant time early:

(1) Fiscal Year (FY) 2021 omnibus appropriations. It is likely that all or some agencies are on a continuing resolution (CR) and that current year funding will be completed soon after inauguration day (1-2 months) through an "omnibus" appropriations law. The spending levels will be negotiated largely by appropriators, meaning there will be very little room for increased spending or change of spending authorities. That said, small accommodations may be made, so a short list of funding and/or authority requests should be identified in the first 1-3 weeks. Identifying those priorities during the transition will be important in ensuring that the CFO's office and other offices have the ability to help build them out.

- (2) FY2022 budget request. In the first year of a first term, the President's budget for the following fiscal year is announced within 50 days of inauguration. President Obama released his FY2010 budget on March 11, 2009, 37 days into his first term. (Congressional budget and appropriations processes usually begin in March.) Agency requests are due even earlier. With such a short window, there is little time to generate and advocate for major initiatives. In March and April, agency heads are required to testify before the appropriating committees to support their budgets, with agency staff engaging the committees until the appropriations acts are passed. If the agency leadership seeks to make major changes to the climate budget, it is critical to start that work in the transition or prior, so it is ready when the time comes.
- (3) FY2023 budget process. After submitting the FY2022 budget, agencies will immediately begin work on the FY2023 budget request, due to Office of Management and Budget in late July, which will later be announced in February 2022. This window provides more time for major adjustments and initiatives. Appendix C provides a proposed FY2022 budget for DOE clean energy RDD&D that raises funding by 30 percent and concentrates funding increases on under-resourced technology areas.
- (4) Economic recovery/Climate legislation. Early action taken by the 117th Congress related to COVID-19 economic recovery may lead to significant investments and programs for clean energy RDD&D, deployment, and standards. This legislative action will require early attention by Departmental policy and program leads and will require engagement and analysis from Department leadership and key leaders in the Applied Energy offices, ARPA-E, CFO, and other department-wide support functions.

As noted in sections below, shaping budget submissions around focused RDD+D low carbon strategies across the Applied Programs, Office of Science, ARPA-E and any newly proposed programs will be critical to achieving broader alignment across the Department. In addition, leaders should plan on setting aside significant time for building out a unified strategy to brief and advocate for the Department's budget to Congress and OMB.

KEY STRUCTURAL AND ORGANIZATIONAL OPPORTUNITIES

The next Secretary and administration have an opportunity to put their stamp on how the DOE is structured and how it should operate to meet programmatic and climate goals. During the Obama Administration, different structures were put into place to try to improve project management, coordination between applied and science programs, and nuclear security.

The following section highlights and summarizes different approaches that both Secretary Chu and Secretary Moniz implemented at the DOE. This section will also provide some context and ideas for organizational issues that are likely to arise, as well as outline new office recommendations that are in the campaign's Climate and Clean Energy Plan.

Revitalizing career civil servants and hiring processes (First 100 Days)

The Energy Department has numerous vacancies across the complex that need to be filled with qualified career civil servants. As we understand it, the Trump Administration has impeded the normal hiring process at the Department. These impediments have effectively frozen hiring across the Department. As such, there are now a large number of vacant and available positions that can be filled early in the next Administration.

As a result, several EERE offices have seen many of their senior career civil servants depart over the past four years. Particularly hard-hit offices include the EERE's Office of Operations ('front office,' which manages the overall program), Solar Energy Technologies Office, Wind Energy Technologies Office, Bioenergy Technologies Office, and Weatherization Office. In addition, the Trump Administration has repeatedly tried to eliminate EERE's State Energy Program, which could potentially administer funding to states as part of an economic recovery package.

Allowing the DOE Chief Human Resources Officer to recommend a new hiring process that meets all legal requirements but speeds up the timeline is an early action the next Secretary can do to help revitalize the career workforce, as well as bring in talented managers and experts.

Ensuring scientific integrity in policy and grantmaking (Day 1)

Since taking over the Department in 2017, the Trump Administration's self-stated goal has been to "refocus" DOE's research and development work on "early-stage" activities. The Trump Administration has used this loosely defined "early-stage" label as pretext to cut funding for renewable energy research, curtail EERE FOAs and projects, and prevent DOE programs from working on climate issues.

Years of this "early-stage" focus has had a chilling effect on DOE staff, particularly in the Applied Energy programs. Many civil servants are reluctant to express new research priorities with renewable energy or climate implications for fear that they will be marginalized.

As previously mentioned, within the first few days, the Secretary should definitively address this chilling effect by taking several steps:

- Issue a revamped mission statement for the overall agency that prioritizes climate as one of DOE's core areas;
- Re-issue an agency-wide Statement on Scientific Integrity that reaffirms DOE's commitment to being a leading RDD&D agency that is rooted in science;
- Publicize this statement through an email and/or video statement to all DOE and national laboratory staff, explaining the policy and emphasizing the Department's renewed focus on cutting-edge research and prioritization of climate change;
- Conduct a DOE town hall meeting, with potential press coverage, to announce the Statement and renewed priorities.

After issuing and publicizing the statement, incoming appointees should prioritize setting new research guidelines, along with developing and communicating new processes for how FOAs will be planned, awarded, and managed.

Such actions will bring back much needed direction and provide confidence to the non-partisan civil servants at the Department and researchers at the national labs.

Organizing Under Secretary roles and departmental management (Day 1)

The current structure of the DOE, based on Congressional direction, is to have three Under Secretary positions: the Under Secretary for Energy, Under Secretary for Science, and the Under Secretary for Nuclear Security. U/S for Energy is responsible for overseeing the Applied Energy offices and helps manage five assistant secretaries. The U/S for Science oversees the Director–Office of Science and helps oversee basic science R&D and lab operations. The U/S for Nuclear Security is the head of the National Nuclear Security Administration (NNSA).

Secretary Moniz combined the U/S for Energy and U/S for Science into one position that oversaw both the Applied Energy offices as well as the Office of Science. The U/S for Nuclear Security largely remained the same and a new U/S for Management was created to oversee departmental operations as well as Environmental Management (which are highly complex multi-billion, multi-year nuclear clean-up projects).

The Trump Administration and Secretary Perry reverted back to the pre-Moniz U/S model of a separate U/S for Energy, U/S for Science, and U/S for Nuclear Security. If the next Administration considers permanent changes to the organizational structure, this will require careful planning, expenditure of political capital, and buy-in from a diverse group of stakeholders. Any permanent change to DOE organizational structure will require Congressional direction in legislation.

There is significant value in reshaping the Department to be more effective to meet climate goals. The next Secretary and the White House will be able to recruit and nominate key personnel who can thrive in an organizational structure that is based on accelerating RDD&D on climate change and clean energy. Focusing on recruiting world class talent, and making key management structure decisions early with a strong Congressional strategy, can help fast-track climate and clean energy action at the Department and should be a major goal during Transition and early in the next Administration.

To recap, three potential organizational models that the next administration could consider are:

- Model 1 (Current): U/S for Energy, U/S for Science, U/S for Nuclear Security
- Model 2: U/S for Energy and Science, U/S for Nuclear Security, U/S for Management + Performance
- Model 3: U/S for Energy, U/S for Science, U/S for Nuclear Security, U/S for Management + Performance

An additional set of factors that the next Administration and Secretary should consider when contemplating management issues should include implementation of potential large-scale recovery legislation. This will require a significant ramp up of grant-making programs which will require significant oversight and management and coordination across the complex. Additionally, potential climate legislation could require designing or implementing further management changes, so close communication with Congressional stakeholders drafting legislation will be essential to ensure any efforts are complementary to organizational changes.

Policy/analytical leadership (Day 1 and First 100 Days)

Secretary Moniz created a new office focused on energy and policy analysis directly in the Secretary's office called Energy Policy and Systems Analysis (EPSA). EPSA provided the Secretary and political leadership deep analysis of energy technologies to help inform policy decisions and RDD&D investments. It also helped other agencies as they drafted regulatory actions and inform Congress of potential legislation.

EPSA was also responsible for drafting and releasing the <u>Quadrennial Energy Review</u> that provided over seventy recommendations on how to improve and strengthen the power grid. The next administration will be able to structure EPSA and the department's policy and analytical capabilities with broad discretion. Finding the right mix of consolidation of policy expertise in EPSA and keeping some core functionality in program offices will be a management decision that will be discussed early by career staff in the next administration. In addition, early alignment of DOE's analytical plans with the broader administration climate agenda will maximize EPSA's impact.

Ensuring that there is strong policy and analytical leadership early in the next administration is important for the Secretary to help shape climate analysis and policy. The Secretary will need to consider where this office or function sits in the department, the required budget, and dedicated staffing needs. Additionally, the Secretary's choice of EIA Administrator is vital to DOE's role in producing energy and climate policy analysis. Investing time in identifying, recruiting, and nominating a highly qualified individual who has deep understanding of energy and climate issues as well as management experience will be important for helping EIA produce relevant data for policy discussions.

Organizing Secretary/COS office (First Week)

During the first months of a new Administration, the Secretary and Chief of Staff are flooded with requests from multiple parts of the White House, other agencies, states, and NGOs for data, collaboration, and/or meetings.

Creating a system in place with knowledgeable and patient Deputy Chief of Staffs, Senior Advisors, and Special Assistants can help alleviate some of the burden. To ensure success, these leaders can efficiently track down information and distill complex issues into yes or no decision points. The ability to quickly resolve issues and gather information helps to raise overall confidence in the DOE's management ability both across the government and with outside organizations. This, in turn, has a positive impact on the DOE's standing with Congress and Industry and ultimately, the Department's ability to push forward with its agenda.

3 Key Program Opportunities and Recommendations

To help the Department quickly start managing and refocusing its climate and clean energy agenda, DOE leadership should consider organizing a short-term management Strike Team, comprised of career and acting officials for major offices. This team, comprised of the key core management, energy, and science offices throughout the agency, and led by the Chief of Staff, can provide quick interim departmental wide leadership to execute on early priorities, begin the process to refocus or reshape programs not aligned with Administration policy, fix department-wide management issues and be a forum to prepare for any significant legislative initiatives while awaiting Senate-confirmed leadership.

This section describes recommendations and actions that can be taken early in a new administration to fix and refocus regulatory actions, along with retooling management practices to focus on climate emissions and management strategies of sensitive geopolitical issues that fall under the purview of the Department.

Compared to other Agencies, the Energy Department has limited regulatory authority on greenhouse gas emissions. As a largely RDD&D agency, the biggest opportunities for the Department will be to accelerate clean energy RD+D, design new climate solutions, and utilize analytical capabilities for broader policy design.

CLEAN ENERGY AND CLIMATE PLAN OVERVIEW

For context, a major presidential campaign has released the most comprehensive and forward-learning clean energy and climate plan to date. This administration-wide roadmap will require a combination of administrative policy, new legislative authority, and annual appropriations to accomplish the following:

- Achieve 100% clean energy economy and net-zero emissions by 2050
- Establish 100% energy efficiency and clean electricity standard (EECES) by 2035
- Invest \$2 trillion for a clean energy economy over 4 years
- Invest \$400 billion for clean energy innovation and research over 10 years
- Develop new corporate average fuel economy standards (CAFE) to ensure 100% of new light- and mediumduty vehicle sales are electrified
- Ensure net-zero emissions standard for all new commercial buildings by 2030
- Rejoin the Paris Climate Agreement
- Rely on American union labor and American-made materials to build infrastructure and clean energy economy
- Set a goal that disadvantaged communities receive 40% of overall clean energy spending benefits
- Create a new Advanced Research Projects Agency on climate

Following is a closer look at specific goals and statements from the campaign's plan where the DOE will have a primary or secondary role. While this list is not all-encompassing, this should be helpful in guiding broader Department prioritization and strategy for different activities in policy development, legislative and technical analysis, budget development, and FOAs. In addition to proposing a new sub-agency focused on climate called ARPA-C, the broader climate and energy plan includes:

Utilities, Energy Tech, Transmission

- Establish an energy efficiency and clean electricity standard for utilities to achieve carbon-free electricity generation by 2035
- Invest \$150B over four years in RDD&D
- Develop a long-term transmission siting and permitting strategy

Distributed Generation and Storage

- Allocate \$150B on RDD&D for clean energy distributed generation and storage
- Formalize grid-scale storage as part of a broader net-zero carbon plan for power sector
- Promote and establish streamlined permitting for rooftop solar and energy efficiency retrofits

Buildings

- Reduce carbon footprint of U.S. building stock 50% by 2035
- Create incentives/new programs for building retrofits
- Upgrade 4 million buildings and weatherize 2 million homes in four years
- Set new appliance and building standards to improve energy efficiency

Vehicles

- Deploy over 500,000 EV charging stations by 2030
- Develop new CAFÉ standards to ensure 100% of new light-and-medium duty vehicle sales are electrified
- Restore the full EV tax credit, additional consumer rebates for new efficient American-made vehicles
- Incentives for manufacturers to retool and build factories to produce zero-emission vehicles and parts

Biofuels

• Develop the next generation of advanced biofuels

Manufacturing

• Develop a low-carbon manufacturing sector in every state, with manufacturers becoming eligible for new tax credits and subsidies to upgrade facilities and equipment

Carbon Capture

• Target RDD&D investments to lower the cost of carbon capture technology to ensure this technology is scalable and widely available

Quick start: Climate Strike Team (Day 1)

While the Department will be waiting on Senate confirmed leaders in key programmatic offices, the Secretary, Chief of Staff, and a small number of key political advisors will be tasked with getting up to speed on nuclear security issues, along with receiving national security briefings and key program updates from career officials in acting capacities.

In order to effectively manage the Department while awaiting additional political appointees and Senate confirmed staff, the Chief of Staff should stand up a short-term Climate Strike Team consisting of acting officials from key program offices and agency-wide departments. This Strike Team is intended to function for a short period of time—potentially the first 100 days or until additional political leadership start in management positions.

This Climate Strike Team is an interim management tool to quickly identify any hot button issues in the department, potentially block any anti-climate actions taken by the previous Administration, and quickly refocus or pause FOAs that are not aligned with new administration policy. The Management Strike Team is a short-term solution. This specific group is not intended to create Department wide climate policy or coordination, which will be done in other forums described later in this document. In addition, it is likely that security clearances for new political appointees will be delayed or backlogged but previous appointees may be able to have clearances updated quickly, helping bringing management back to the department.

For context, a similar Management Strike Team was put in place by Secretary Chu to quickly focus the Department and prepare for the American Recovery and Reinvestment Act (ARRA) implementation, which included rapidly growing grantmaking programs, expenditures to states, localities, and cities, and tax credits and grants to private sector companies.

DOE was able to accomplish and meet its early ARRA goals by creating this interim management structure, comprised of acting heads of each main DOE office. These heads met on a daily basis and were chaired by a Senior Advisor who reported directly to Secretary Chu. During this time, most nominees for key posts were awaiting Senate confirmation and acting career staff were largely in charge of key offices. Organizing around ARRA and creating an interim management structure allowed the department to quickly rewire key processes and parts of the organization while providing clear direction and leadership to the Agency. This process helped identify gaps that the Department needed to solve for before the implementation of the ARRA act and helped set the stage for Departmental leadership as they entered government.

DOE will likely have significant balances of unspent funding from prior congressional appropriations ('carryover funding' or 'unobligated balances') allotted to key offices such as EERE or OE. Depending on congressional intent for those balances (as specified in congressional appropriations act language or in accompanying committee report documents), these funds could be repurposed quickly and granted out via FOAs.

DOE's Office of the CFO constantly tracks these balances in its Base Financial Reports (BFRs). The DOE transition team should prioritize requesting updated DOE BFRs from the CFO office, which can be provided to new leadership quickly (typically within a day). A Climate Strike Team would enable the new DOE leadership to quickly deploy unspent carryover funds or block FOAs that do not meet administration policy priorities.

Reshape DOE's formal mission to focus on climate (Day 1)

On Day One, the Department's new leadership should take steps to publicly and definitively signal the agency's renewed focus on climate change. These steps include:

- Re-issuing DOE's formal mission statement to place climate at the core of agency activities;
- Promulgating this new mission statement with an accompanying press release to all DOE, national laboratory and contractor staff on the Secretary's first day;
- Delivering an initial speech to internal and external stakeholders placing climate at the center of the agency's work; and
- Holding an all-hands meeting with DOE personnel to publicize DOE's new mission and signal to federal employees that the organization is returning to a focus on high impact, climate-focused and cutting-edge research.

As currently written, the agency's formal mission is "to ensure America's security and prosperity by addressing its energy, environmental and nuclear challenges through transformative science and technology solutions."

New leadership should immediately issue and publicize a revamped mission statement that prioritizes climate change alongside DOE's nuclear security, nuclear nonproliferation and environmental activities. Immediate action on the mission statement will be a powerful clear signal of the agency's new priorities to internal and external stakeholders and lay the foundation for subsequent policy and budgetary proposals.

Restoring and restarting the Appliance Standards Program (Day 1)

A Day One, or first week, Secretarial Order to the Assistant Secretary for EERE and General Counsel (or most likely acting officials) for a review of the program and a pause on any regulatory actions to be reviewed for potential realignment. The content of the order can focus on a 60-day pause on any non-consent decree regulatory actions for a programmatic status update by the Assistant Secretary for EERE and General Counsel to the Secretary.

DOE's Appliance Standards program is its most important regulatory mitigation tool. Currently, the DOE sets Appliance Standards for more than 60 categories of appliances and equipment. By 2030 the <u>standards</u> promulgated by DOE will have cumulatively led to over \$3T in energy cost savings for families and businesses, avoided nearly 7 billion tons of carbon pollution, and created jobs in all 50 states.

The Trump Administration has taken steps to roll back prior standards, such as the Light Bulb rule, and has changed internal polices and processes to weaken all future standards.

The next administration can take immediate action to put the Appliance Standards program back on track by:

- Pausing regulatory actions currently underway for policy review on Day One
- Beginning the legal and policy programming to rescind or revise the Trump Administration's updates to the Process Rule (DOE's guidelines for setting all appliance standards)
- Meeting early in the administration with key stakeholders, including industry partners who have historically been party to appliance standards rulemaking, which helps build political support for the program and determines where collaboration can best fast track regulations
- Setting and publicly releasing a multi-year calendar for appliance standards
- Setting a GHG mitigation goal for first-term standards (similar to the goal set by the Obama Administration under the <u>2013 Climate Action Plan</u>). Such a goal will help to focus both DOE development of standards and EOP/OIRA review of the standards.
- Refocusing and allowing the Office of General Counsel's Enforcement division to perform its functions

The set of actions described above are best suited to be implemented by the General Counsel and the Assistant Secretary for EERE, as they have the delegated authorities to manage these programs. It is likely these positions may not be filled and confirmed by the Senate in the first few months of the next administration, therefore careful considerations on how to best manage the Appliance Standards program in the interim must be made based on which key career EERE/GC officials will be placed in acting leadership roles. When filling these roles, it is prudent to place career officials who have the experience, ability, and judgement to help turn this program around while awaiting Senate confirmed officials.

Creating a climate policy and RDD&D Task Force to invest in and accelerate clean energy RD+D (Day One)

Another Day One (or first few weeks) action should be to announce the formation of a Climate Policy and RDD&D Climate Task Force through Secretarial order, chaired by the Secretary. This task force will formally bring together the Assistant Secretaries, Under Secretaries, key HQ staff (CFO, EIA, Procurement, Operations), and National Lab directors to determine how to design and integrate a broader climate strategy into all aspects and operations of the Department. Bringing together the broader leadership of the department—both career and political—around a deep decarbonization strategy should permeate through all decision-making processes and strategy.

This new task force—which, as mentioned, will largely be comprised of career officials while political leadership is awaiting confirmation—will be an entity chaired by the Secretary. This enables Department leaders to instantly make climate-related policy and RDD&D initiatives a top priority, clearing communicating to staff, contractors, and stakeholders that climate-related activities are a top priority throughout the entire complex.

The Department currently has <u>a Laboratory Operations Board</u> (LOB) that brings together the Directors of all 17 National Laboratories into a formal process of engaging and advising the Secretary. While the new Climate Policy and RDD&D Task Force could theoretically use some of the existing LOB infrastructure to move more quickly, we recommend standing up a separate Climate Task Force in order to have more control and flexibility.

Institutionalizing climate policy and RDD&D throughout the Agency, including the national labs, allows all decision-making across the department—ranging from large scale RDD&D decisions to small-scale procurement decisions—to be done through the lens of climate action. The national laboratories serve a larger role in the broader climate-research community than do HQ staff. Experts at the labs often do this work with little direction or supervision from HQ. From basic research to advanced computer modelling, the national labs play an important role in the broader scientific community's research into low carbon and basic climate research.

In addition to helping raise the profile of climate science and research more broadly at the Department, this new Climate Task Force can be utilized to expand the scope of RDD&D programs that the DOE is currently conducting in climate science or related fields, such as adaptation or new climate mitigation technologies not presently under DOE's purview. This group can also develop a strategy for massively scaling up investment into existing DOE clean energy research and development programs. This unique leadership group would allow the DOE to coordinate development of new research areas, and then pitch these ideas to Congress, as well as the broader scientific and business community.

As mentioned in the Management and Budget section, the Department has two quick budget submissions to complete within the first 100 days, with the FY2022 budget representing the Administration's more expansive set of policy priorities. The DOE's Applied Energy Programs, the Office of Science, and ARPA-E comprise the bulk of federally-sponsored energy RDD&D. Each program focuses on different part of the technology life cycle: the Office of Science on basic scientific research; ARPA-E on early stage companies that represent breakthrough/disruptive technologies; and the Applied Energy programs on deploying nearer term technologies and overcoming policy and institutional barriers.

These three programs—when aligned and well-coordinated—enable the DOE to work across the Department to address each state of the technology RDD&D cycle in an integrated fashion. For example, during the Obama Administration, the DOE created the SunShot program which brought together solar technology experts from ARPA-E, Applied Energy–EERE, and the Office of Science to work collaboratively towards the goal of reducing total costs of solar energy by 75 percent. After hitting the program goals three years early, SunShot set new aggressive goals for 2030, and this cross cutting/technology team continues to work together on funding opportunity announcements (FOAs), industry engagement, and scientific leadership.

The SunShot program was notable for its cross-cutting approach and its success. However, this type of approach does not happen naturally or automatically at the Department. It will require a significant push and sustained focus from Departmental leadership. We recommend that the next administration utilize the SunShot model to coordinate Department-wide work on a set of technology goals to accelerate GHG emission reductions by lowering costs. As described below, robust analytical work should underpin this technology goal-setting, but technologies for consideration could include:

- Energy storage
- Transmission and distribution
- Grid infrastructure and security
- Building electrification and control technologies
- Biofuels

- Advanced manufacturing
- Industrial efficiency
- Carbon capture
- Carbon removal technologies
- Advanced nuclear technologies
- 'Greening' gas, including hydrogen, ammonia and other alternatives

Focusing RDD&D on these specific clean energy technologies will also ultimately help lower the cost of these technologies, while helping EPA and other regulatory agencies set more stringent rules in the coming years. This focused RDD&D work will also help shape EIA's projections on clean energy technology costs and deployment as well, which will shape financial markets and how investors and policy makers make decisions in the future.

The administration should consider going further by announcing a National Energy Innovation Mission. A recent <u>analysis</u> proposing a roadmap for such a mission proposed that to do so, the federal government should triple its funding for energy RDD&D over the next five years. This would be spread across many agencies, although roughly half would be for RDD&D at DOE (ARPA-E, Office of Science, and Applied Energy). The FY2022 budget proposal would include a 30% increase in DOE's R&D budget. Further details for what such a proposal might look like are included in the Appendix C.

Use analytical capabilities to underpin administration climate action (Day 1)

With a likely early legislative push around economic recovery or potentially even building block climate legislation, the DOE can help perform modeling and analysis for the White House and Congress. In order to do that well, it will be important to identify the right team of career federal policy experts in the Department who can be marshalled onto this early effort with limited political staff oversight.

Collectively, the DOE's federal HQ staff and national lab experts have the broadest, most robust energy-related technical expertise, analytical capability and modeling tools in the federal government. Organizing and utilizing these assets effectively presents a major opportunity to contribute to an administration-wide climate action effort. Our recommendations include:

- Technology goal-setting: Above we recommend organizing RDD&D efforts by focusing cross-cutting DOE teams on technology goals. DOE should utilize a deep decarbonization framework to help identify which technologies to focus such teams on. For example, DOE could orient its RDD&D effort on five to ten technologies needed for cost-effective deployment within 10 years, in order for deep decarbonization to stay on track. Like SunShot, specific goals would be grounded in DOE's technical expertise and would be aligned with the Administration's overall climate change strategy. DOE's budget should reflect an ambition to "go big" on clean energy innovation, perhaps as part of a National Energy Innovation Mission to triple the federal energy R&D budget by 2025, starting with a 30 percent increase for DOE's budget in FY2022.
- **Policy analysis:** DOE's strong analytical capabilities can be used to inform and explain the new administration's climate action efforts. As noted, DOE's principal regulatory authority is limited to the appliance standards program. The authority to limit greenhouse gas emissions and manage energy production on federal lands reside elsewhere within the federal government. States also have important authorities, and the vast majority of the energy system is privately owned. Because DOE is not a major regulator, and because its expertise is widely acknowledged by stakeholders, DOE analysis can be a powerful tool to inform policies implemented in other parts of the administration. DOE can also help with explaining that policy externally. For example, some stakeholders had concerns about the potential impact of EPA's Mercury and Air Toxics Standards on grid reliability, so the Obama DOE worked closely with EPA and the EOP to conduct analysis that concluded that such concerns were largely unfounded.

• DOE's reputation with Congress and other stakeholders: DOE can also use its capabilities to assist Congress in development of legislation. During the Obama Administration, DOE produced extensive, multiyear analyses (e.g., Quadrennial Energy Review) and targeted, rapid analytical responses to Congressional inquiries (e.g., 2015 DOE analysis of wind and solar deployment resulting in the extension of the PTC and ITC). If Congress considers stimulus legislation in early 2021, these capabilities will likely be called on to help the White House and Congress consider the effects of proposed legislation on energy markets, carbon dioxide emissions, etc.

Preparing for economic recovery legislation (First Week)

As mentioned above, any economic recovery legislation introduced early in the next Congress will likely have large clean energy grant programs that can quickly put Americans back to work. In addition to economic recovery legislation, major programs as described in the campaign's climate and clean energy legislation have large grant making programs that will likely be housed at the DOE if passed.

Based on lessons learned from the Recovery Act management at DOE, the Secretary and leadership can take some proactive steps to help prepare the Department for a significant ramp up in activity:

- Design a Departmental management structure to oversee the ramp up and execution of grant programs and new programs
 - Identify a senior point person with strong management experience and, most importantly, the bandwidth to take on a management role
 - If necessary, recruit someone from outside Government as a Senior Advisor to the Secretary, granting them a full-time role imbued with the authority to manage this enterprise-wide efforts
 - Determine early how to split up responsibilities between the Secretary and the Deputy Secretary so that the Department, White House, and external stakeholders understand how management and decision making happens related to these programs, which will ultimately reduce bottlenecks in the Agency
 - Focus on hiring and placing strong political leadership in S3 and Assistant Secretaries in the Applied Programs as well as Senior Advisors and Special Assistants where most of the day-to-day management of large programs will be taking place
 - Perform a gap analysis on grant making for the Applied Programs, Science programs, ARPA-E and Field Offices to determine if the Department has enough people and capacity to execute thousands of new grants
 - Key positions required for these activities are: Contract Officers, Contract Lawyers, Financial Analysts, Portfolio Managers
- Identify programs with the CFO that have large unspent balances and help prioritize how annual appropriations are deployed vs. new recovery programs
- Ensure that Congressional Affairs and Public Affairs have a seat at the management table for economic recovery, ultimately the Department's public success will be shaped by the effectiveness of Congressional and Public affairs
- Create a formal performance and management dashboard to track the internal management of programs and for sharing with external stakeholders such as the White House or Governors
- Ensure that Public Engagement or staff dedicated to outreach are also deployed to engage with outside stakeholders paying close to attention to the Department's performance and those who have the ability to shape public perception of the Department's performance

Elevate cimate change and clean energy engagement with international partners by creating a departmental task force (Day 1)

The Department has a leading role in an Administration strategy for international engagement around energy, climate change, and national security issues. The next Secretary, Deputy Secretary, and Departmental leadership will be called upon to develop strategies and programs that focus on issues such as technology cooperation, R+D coordination, joint efforts around clean energy deployment and demonstration, nuclear energy agreements, and LNG. More broadly, as a statutory member of the National Security Council, DOE has central role to play in mainstreaming climate change considerations in all aspects of US foreign policy from development finance to regional stability to international economic cooperation. Succeeding on our wider foreign policy agenda requires changing the very statecraft of foreign policy to mainstream the climate crisis into the way we assess and act on our national security, and DOE is key to that effort.

The next Secretary and Deputy Secretary should formalize a Department-wide task force on international engagement, which is led directly by the Deputy Secretary to elevate and drive the agency of the Assistant Secretary for International and connect it across all of the key offices and personnel focused on international diplomacy for close coordination and strategy, as well with other agencies and the White house. In addition, the next Secretary should prioritize clean energy and climate change in these engagements with international partners.

Refocusing Fossil Energy Program (First 100 Days)

The Department's Fossil Energy Program will likely garner significant attention from across the political spectrum in the next administration. Certain groups will advocate for a significant reduction in funding to the program, industry will be looking for funding and partnerships for RDD&D for low-carbon technologies, and exporting low-carbon fossil technology will be important for international cooperation on climate.

As with the overall Department, the incoming administration should immediately issue a revamped FE mission statement that places FE research within the broader context of DOE's core focus on climate change. This mission statement is an important signal to internal and external stakeholders, communicating that the organization is definitively changing directions and focusing its expertise and funding on low carbon technologies.

It is likely that the Trump Administration has funded reports and analysis that reinforce their policy agenda. These reports might not be completed and released until the first year of a new administration. Thus, getting ahead of these reports and reprogramming analysis for new policy objectives involves strategic intervention that should be done carefully as soon as new political leadership is brought into the Fossil Energy office.

Three areas that will require early and careful attention are:

- (1) Low-carbon RDD&D strategy: Shaping the RDD&D agenda of the Fossil Energy program to focus as much as possible towards low carbon technologies will be an important and challenging effort. There will be significant pressure from Congressional leaders on both sides of the political aisle, pushing their ideas on how to best shape the program. A reshaping of the program is an opportunity to focus the program on RDD&D that can improve the efficiency of existing plants, sequester carbon from power plants and industrial sources, and also identify opportunities to utilize sequestered carbon to reduce emissions from carbon intensive processes such as cement manufacturing. In addition, exporting these technologies to areas of the world where we expect to see increased usage of fossil fuel will be an important—but politically sensitive—tool to help reduce global emissions.
- (2) SPR strategy: Congress has taken steps to sell off around half of the Strategic Petroleum Reserve to pay for other spending priorities. Despite reduced oil import dependence, US gasoline prices are set in a global market and remain vulnerable to supply disruptions. The next administration will need to decide whether it wants to seek funding from Congress to reduce the scheduled SPR sell-off, continue implementing the SPR modernization program begun under President Obama, and evaluate new vulnerabilities and potential solutions to oil and petroleum product disruptions stemming from severe weather risks.

(3) LNG exports: The DOE's LNG export program will garner significant attention early in the next Administration. An early action the next Secretary can start is the process to update the analysis of the lifecycle global GHG emissions impacts of LNG exports including associated methane emissions and incorporate that into future LNG permitting decisions. This process will take months and will take careful analysis as well as leadership to manage a highly sensitive set of issues. However, given the state of the current LNG market it is very unlikely that there will be new applications requests to consider in the short term.

4 Cross-Cutting Priorities and Relationships

In order to call attention to issues of urgent importance, DOE leadership should prioritize internal efforts directed at public engagement. Maintaining positive relationships with green groups, climate action groups, trade associations, and advocacy organizations is a crucial step in ensuring DOE's priorities meet the expectations of the larger climate action movement. In improving the public support for DOE writ large, the agency will have more power to complete difficult and long-term projects, addressing organizational and process issues related to federal energy regulatory commission, clean energy finance, grid security, environmental management, and disaster response.

Congressional strategy (Day 1)

Setting the right tone and tenor with Congress is an important early test for a new Secretary and political leadership at the DOE. Many of DOE's difficult and long-term projects, which have historically involved strong oversight from Congress, have led to difficult Hill relationships that blocked or significantly delayed policy agendas due to political issues. The next Secretary and COS should take careful consideration when designing a congressional strategy with political aides and clearly communicate the goals and expectations with political leadership in order to best ensure productive Congressional relationships across the Department and national labs. Being deliberate, thoughtful, and consistent with strategy allows appointees and senior career staff the ability to work collectively to achieve Department climate-related goals.

As mentioned before in the memo, there is high likelihood that the Energy Department and the national labs will be called upon to help provide analysis and modelling to help support legislative development, particularly with potential legislation around economic recovery or with potential building block climate legislation. Creating a strong and responsive program that works with the White House and Congress will help bring good will towards the Department.

Public engagement (First 100 Days)

Secretary Chu created a new Office of Public Engagement to help increase communication with Green Groups, climate action groups, trade associations, and advocacy organizations that were interested in helping shape the DOE's priorities.

As the DOE transitions from a traditional research and development agency to a multi-faceted department at the forefront of a new climate strategy, the engagement of these groups will be an important aspect in raising the profile of the DOE with elected officials, states, the financial community, and new climate activist organizations that will be pushing hard from the outside for action.

In addition, DOE leadership should consider how the many standing DOE advisory committees can be better used to aid the Administration's push on climate change. The most prominent of these is the Secretary of Energy Advisory Board; the National Petroleum Council also deserves early attention to focus its agenda on the clean energy transition. When vacancies arise on these Advisory Boards due to expiring terms, the Department should recruit leading experts in climate change and clean energy to participate in these Boards to help inform and strengthen the Administration's climate change strategy.

ISSUES DESERVING OF EARLY ATTENTION

DOE has existing programs and projects that deserve early attention due to their sensitive nature or high profile. We could draft volumes of background on each specific topic but we are highlighting a few key topics and historical projects that will require careful attention early in the next administration.

These projects/issues require careful public affairs and policy oversight since we have seen these issues cause delays in Senate confirmations, bringing unnecessary headaches to Departmental leadership in the past if not managed well.

Federal Energy Regulatory Commission

• FERC, an independent agency under the Energy Department, is the policy and decision-making authority for significant transmission, LNG, and other pipeline permitting issues across the nation. While the DOE leadership does not have oversight over FERC, there has been a considerable increase in coordination between the DOE and FERC over issues in the Trump Administration.

Loan Programs Office

- DOE has more than \$40B available for loans or loan guarantee for clean energy projects. This office's activity has largely mothballed but will come under political scrutiny if the office is revived and loans begin to close in the next administration.
- Additionally, we expect a Climate Bank or a Clean Energy Development Authority to be something that might be considered by the next Congress which will bring attention to this program again.

Grid Security

• The Trump Administration, through the Office of Electricity, has created new procurement guidelines for utilities that limit the ability to buy power equipment from foreign countries. This is likely an issue that will be asked to be revisited or clarified in the next administration by the utility industry.

Yucca Mountain/Nuclear Storage

• For decades, policy issues around the long-term storage and siting of nuclear waste facilities have been hot-button topics for the Department and Congress. Early Congressional engagement on these issues will be required. Early budget submissions depending on the content will drive early policy conversations on this topic.

Environmental Management

• From a program management; technology; and budget perspective, the Environmental Management program is one of the most challenging and politically sensitive. To help ensure a smooth transition, we recommend putting a dedicated lead in the Front Office and ensuring the best possible team of career officials are in key management position.

Disaster Response

• Working with DHS and FEMA, the DOE is responsible for helping ensure that the electrical grid and power can quickly be placed back into service after a natural disaster. Ensuring that the DOE team is well staffed, resourced, and the appropriate management structures are in place is an important early check on the program.

Appendix A: DOE Organization and Budget

The Department of Energy's most recently enacted budget of \$38.5 billion (FY2020) supports programs in four primary areas:

- (1) The National Nuclear Security Administration (NNSA, \$16.7 billion);
- (2) Energy programs (\$7.5 billion);
- (3) Scientific research (\$7 billion); and
- (4) Activities to cleanup environmental contamination leftover from the World War II and Cold War nuclear weapons activities (\$7.3 billion).

From a budgetary perspective, the Department of 'Energy' is a misnomer: nearly two thirds of DOE's annual budget supports NNSA activities and environmental cleanup—*not* energy.

The Trump Administration has exacerbated the defense/nondefense funding gap by focusing money on the nuclear programs and proposing to cut DOE's energy and science efforts. Congress has broadly rejected Trump Administration attempts to cut DOE energy funding, but funding for DOE energy programs has remained flat at a time when—given the scope and urgency of climate change—their activities and funding should be increasing.

NATIONAL NUCLEAR SECURITY ADMINISTRATION

The NNSA budget divides DOE's nuclear security activities into three areas:

- (1) Weapons Activities (\$12.5 billion): U.S. nuclear requires constant and costly upkeep, testing and refurbishment ('life extension programs,' or LEPs). LEPs and related programs maintain the 'surety' of these weapons—in other words, they certify that U.S. nuclear weapons will detonate when they are expected to do so, and will *not* detonate by accident.
- (2) **Defense Nuclear Nonproliferation (DNN, \$2.2 billion):** DNN is the nonproliferation arm of NNSA, responsible for all U.S. efforts to prevent state and nonstate actors from acquiring nuclear or radiological weapons.
- (3) Naval Reactors (NR, \$1.6 billion): NR develops and maintains the nuclear reactors that propel U.S. nuclear submarines and aircraft carriers. NR's current major program is developing propulsion for the COLUMBIA-class submarine, intended to be the next generation of U.S. nuclear submarines.

ENERGY PROGRAMS

DOE's energy programs have been reorganized several times in the past decade, often resulting in confusion both within and outside of the department.

Major DOE energy programs include the following:

- (1) Energy Efficiency and Renewable Energy (EERE, \$2.8 billion): EERE funds and manages renewable energy efforts around the country. EERE separates its renewable energy funding into three areas:
 - > *Sustainable Transportation:* Subprograms for next-generation cars and hydrogen fuel cells;
 - > *Renewable Power:* Subprograms for solar energy, wind energy, water power and geothermal energy;
 - > Energy Efficiency: Subprograms for advanced manufacturing, building technologies, weatherization, state energy programs and others.

EERE also manages the National Renewable Energy Laboratory (NREL) in Boulder, Colorado.

- (2) The Office of Electricity (OE, \$190 million): OE supports research and development into the electricity grid.
- (3) Cybersecurity, Energy Security and Emergency Response (CESER, \$156 million): Until recently, CESER activities were part of OE. The Trump Administration spun CESER out of OE, ostensibly to give more priority to cybersecurity functions.
- (4) Nuclear Energy (NE, \$1.5 billion): NE funds research into advanced nuclear technology technologies and maintains research facilities such as the Advanced Test Reactor (ATR) at Idaho National Laboratory. NE also manages DOE's efforts to develop a final and secure repository for spent nuclear fuel and related materials.
- (5) Fossil Energy Research and Development (FE R&D, \$750 million): The Trump Administration has utilized the FE R&D program to promote fossil fuels as reliable and efficient in comparison to renewable energy sources, and to prop up the coal industry. Incoming administration officials will need to reorganize FE activities into the context of a climate-forward policy program.

SCIENCE PROGRAMS (\$7 BILLION)

DOE's Office of Science (SC) is the country's largest supporter of basic research into the physical sciences. SC manages subprograms specialize in almost every area of basic scientific research, including Basic Energy Sciences (BES), Biological and Environmental Research (BER), Nuclear Physics (NP), Fusion Energy (FES) and others.

The Office of Science funds research at labs and universities around the country. Much of this research takes place in traditionally Republican states such as Tennessee. As a result, many Republicans in Congress support SC activities, and SC funding has *increased* during the Trump Administration.

ENVIRONMENTAL CLEANUP ACTIVITIES (\$7.3 BILLION)

DOE's environmental management (EM) program is responsible for cleanup of environmental contamination leftover from the World War II and Cold War nuclear weapons facilities. Key sites include the Hanford Site in Washington and the Savannah River Site in South Carolina.

Budget Overview Department of Energy FY2020 enacted funding \$39 billion

Major offices	Amount (bn) ¹
National Secretary for National Nuclear Security Administration	25.3
Under Secretary for Science	7.0
Under Secretary for Energy	3.7
Advanced Research Projects Agency–Energy	0.4
US Energy Information Administration	TBD
Total	36.4

Major grants and programs	Office	Amount (mn) ²
Weapons Activities	NNSA	12.4
Environmental Cleanup	S4	7.5
Science	S4	7.0
Energy Efficiency and Renewable Energy	S3	2.8
Defense Nuclear Nonproliferation	NNSA	2.2
Naval Nuclear Reactors	NNSA	1.6
Nuclear Energy	S3	1.5
Advanced Reactor Demonstration Program (new)	S3	TBD
Fossil Energy Research and Development	S3	0.8
Advanced Research Projects Agency–Energy	ARPA-E	0.4
Electricity	S3	0.2
Cybersecurity, Energy Security, and Emergency Response	S3	0.2
Total		36.6

Major loan and loan guarantee programs	Office	Program
		operations (mn)
Title 17 Innovative Technology Loan Guarantee Program	S3	29
Advanced Technology Vehicles Manufacturing Loan Program	S3	5
Tribal Energy Loan Guarantee Program	S3	2
Total		36

¹ Numbers do not sum to agency total because minor programs and offices are excluded. ² Grants and program funding are derivative of major components.



Appendix B: Timeline of Key DOE Recommendations

DAY ONE

- Quick Start–Climate Strike Team
- Reshape DOE's Formal Mission to Focus on Climate
- Use Analytical Capabilities to Underpin Administration Climate Action
- Organizing Under Secretary Roles and Departmental Management
- Establishing Formal Policy/Analytical Capabilities
- Congressional Strategy for Crosscutting Programs

FIRST WEEK

- Organizing Secretary/COS Office management and personnel
- Restoring and Restarting the Appliance Standards Program
- Preparing the Department for economy recovery legislation
- Ensuring Scientific Integrity in Policy and Grant Making
- Creating a Climate Policy and RDD&D Task Force to Accelerate Clean Energy RD+D

FIRST 100 DAYS

- Reshape Fossil Energy portfolio
- Refocusing Fossil Energy Program and Early Engagement on Oil Markets
- Revitalizing Career Civil Servants and Hiring Processes
- Public Engagement Strategy

Appendix C: Proposal for DOE's Budget in a National Energy Innovation Mission

Funding office/organization	FY2020	FY2022	% change
	estimated	proposed	
Energy Efficency and Renewable Energy (EERE)	2,228	488	20%
Vehicle Technologies Office (EERE/VTO)	396	488	
Bioenergy Technologies Office (EERE/BETO)	260	320	
Hydrogen and Fuel Cell Technologies Office (EERE/HFTO)	150	185	
Solar Energy (EERE/SETO)	280	303	
Wind Energy (EERE/WETO)	104	113	
Geothermal Technologies Office (EERE/GTO)	110	170	
Adv. Manufacturing Office (EERE/AMO)	350	432	
Building Technologies Office (EERE/BTO)	230	301	
Office of Carbon Management (CM)*	472	812	72%
Carbon Capture (Power and Industrial)	115	300	
Carbon Utilization	21	25	
Carbon Storage	79	120	
Adv. Energy Systems/Crosscutting	123	150	
Negative Emissions Technologies (new office)	—	75	
Methane Leak Detection and Management	18	22	
Office of Nuclear Energy (NE)	1,493	2,028	36%
Versatile Test Reactor	65	450	
Reactor Concepts RD&D	102	163	
Fuel Cycle R&D	305	255	
Advanced Reactor Research, Developement and Demonstration	330	520	
Office of Electricity (OE)	190	520	174%
Office of Science (SC)	2,151	2,572	20%
Advanced Scientific Computing Research (SC/ASCR)	173	200	
Biological and Environmental Research (SC/BER)	451	523	
Basic Energy Sciences (SC/BES)	661	766	
Fusion Energy Sciences (SC/FES)	671	740	
Advanced Research Projects Agency-Energy (ARPA-E)	425	516	21%
Subtotal, DOE	6,959	9,130	31%

Proposed FY2022 federal energy innovation budget by technology pillar, compared with FY2020 levels







Citation: https://www.energypolicy.columbia.edu/energizingamerica