



CLIMATE *Friendly* PARKS

# John Day Fossil Beds National Monument Action Plan

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## JOHN DAY FOSSIL BEDS NATIONAL MONUMENT BECOMES A CLIMATE FRIENDLY PARK

As a participant in the Climate Friendly Parks program, John Day Fossil Beds National Monument belongs to a network of parks nationwide that are putting climate-friendly behavior at the forefront of planning. By conducting an emission inventory, setting an emission reduction goal, developing this Action Plan, and committing to educate park staff, visitors, and community members about climate change, John Day Fossil Beds National Monument is providing a model for climate-friendly behavior within the Park Service.

This Action Plan identifies steps that John Day Fossil Beds National Monument can undertake to reduce GHG emissions and mitigate its impact on climate change. The plan presents the park's emission reduction goals, and associated reduction actions needed to achieve these goals. Strategies and action plan items were developed by working groups at the North Coast & Cascade and Upper Columbia Basin Climate Friendly Parks Workshop.<sup>1</sup> Specifically, this plan recommends three strategies:

**Strategy 1:** Identify and implement mitigation actions that the park can independently take to reduce GHG emissions resulting from activities within and by the park.

**Strategy 2:** Increase climate change education and outreach efforts.

**Strategy 3:** Monitor progress with respect to reducing emissions and identify areas for improvement.

While the plan provides a framework needed to meet the park's emission reduction, it is not intended to provide detailed instructions on how to implement each of the proposed measures. The park's Environmental Management System will describe priorities and details to implement these actions.

John Day Fossil Beds National Monument intends to:

- Reduce GHG emissions from the park to 25 percent below 2007 levels by the year 2016 by implementing emission mitigation actions identified by the park.
- Reduce park operations' energy use emissions to 20 percent below 2007 levels by 2016.
- Reduce park operations transportation emissions to 35 percent below 2007 levels by 2016.
- Reduce park operations waste emissions to 15 percent below 2007 levels by 2016 through waste diversion and reduction.

## THE CHALLENGE OF CLIMATE CHANGE

Climate change presents significant risks and challenges to the National Park Service and specifically to John Day Fossil Beds National Monument. Scientists cannot predict with certainty the general severity of climate change nor its impacts. Average global temperatures on the Earth's surface have increased about 1.1°F since the late 19<sup>th</sup> century, and the 10 warmest years of the 20<sup>th</sup> century all occurred in the last 15 years. The single leading cause of this warming is the buildup of GHGs in the atmosphere—primarily carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O)—which trap heat that otherwise would be released into space.

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<sup>1</sup> Original notes from these workshops, including detailed action items not presented in the final plan have been archived by John Day Fossil Beds National Monument and are available upon request.

The continued addition of CO<sub>2</sub> and other GHGs to the atmosphere will raise the Earth's average temperature more rapidly in the next century; a global average warming of 4-7°F by the year 2100 is considered likely.<sup>2</sup> Rising global temperatures will further raise sea levels and affect all aspects of the water cycle, including snow cover, mountain glaciers, spring runoff, water temperature, and aquatic life. Climate change is also expected to affect human health, crop production, animal and plant habitats, and many other features of our natural and managed environments.

At John Day Fossil Beds National Monument, increasing temperatures and changing precipitation patterns may alter park ecosystems, changing vegetation communities, habitats available for species, and the experience of park visitors.

Past climate records document dramatic changes in temperature and precipitation over time, which typically occurred gradually over many thousands of years. These past changes in climate correspond with large scale changes in habitat and vegetation across much of North America, from predominantly forest to more open habitats. The fossil record (as preserved at John Day Fossil Beds) documents that as climate and habitats changed in the past, species and communities have 1) adapted to changes, 2) migrated, or 3) become extinct.

The response of life to past environmental changes offers insight to how communities may respond to current and future changes. Current climate change is occurring very rapidly, and may not provide sufficient time for species to adapt or migrate, particularly for species with specialized needs. Many of the species living on public lands in Oregon survive in fragmented pockets of wild habitat, surrounded by agricultural landscapes. Steelhead trout, bald eagles, and pronghorn antelope are among the species that can regularly be seen by visitors to John Day Fossil Beds National Monument, but these are all uncommon in surrounding areas. Changes in temperature and vegetation may reduce the amount of favorable habitat available for these species, and may ultimately threaten to their continued survival in the area.

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<sup>2</sup> IPCC 2007. Climate Change 2007: The Physical Science Basis. Intergovernmental Panel on Climate Change, Geneva Switzerland. Available online at < <http://ipcc-wg1.ucar.edu/wg1/wg1-report.html> >

# GREENHOUSE GAS EMISSION INVENTORY AT JOHN DAY FOSSIL BEDS NATIONAL MONUMENT

Naturally occurring GHGs include CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and water vapor. Human activities (e.g., fuel combustion and waste generation) lead to increased concentrations of these gases (except water vapor) in the atmosphere.

## Greenhouse Gas Emissions

GHG emissions result from the combustion of fossil fuels for transportation and energy (e.g., boilers, electricity generation), the decomposition of waste and other organic matter, and the volatilization or release of gases from various other sources (e.g., fertilizers and refrigerants).

In 2007, GHG emissions within John Day Fossil Beds National Monument totaled 141 metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>E). This includes emissions from park and visitor activities, including vehicle use within the park. For perspective, a typical single family home in the U.S. produces approximately 12 MTCO<sub>2</sub> per year.<sup>3</sup> Thus, the combined emissions from park and concessioner operations and visitor activities within the park are roughly equivalent to the emissions from the electricity use of 12 households each year.

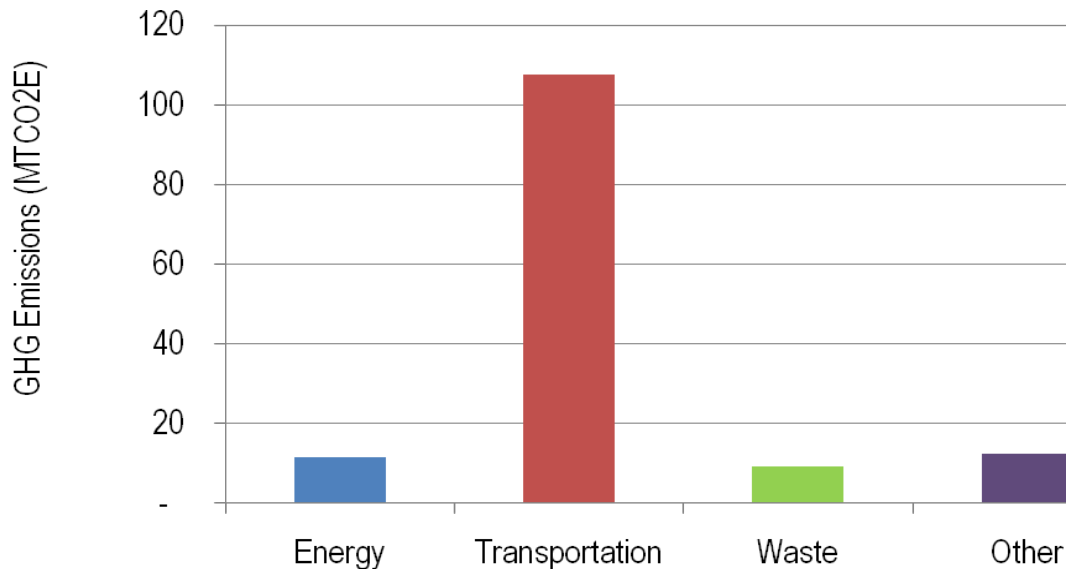
The largest emission sector for John Day Fossil Beds National Monument is transportation, totaling 108 MTCO<sub>2</sub>E. Figure 1 and Table 1 shows the total greenhouse gas emissions for the park, including park operations and visitor-generated emissions. Figure 2 and Table 2 show greenhouse gas emission for Park Operations only, without visitor vehicle emissions. John Day Fossil Beds National Monument is divided into three separate park units. These units are considerable distance apart. Placing staff at two remote units, Painted Hills and Clarno helps to reduce park operation's travel. However visitors who wish to experience the different aspects of the monument must travel long distances between all three units. The requirement for visitors to travel between the units makes estimating and tracking fuel consumption and emissions a very difficult, if not a nearly impossible task. Park and regional efforts at educating the public on fuel conservation and use of fuel efficient vehicles are felt to be the only recourse to address this issue. Implementing the actions included in the transportation and education sections of this plan are critical to meeting the park's emission reduction goals.

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<sup>3</sup> U.S. EPA, Greenhouse Gases Equivalencies Calculators – Calculations and References, Retrieved , Website: <http://www.epa.gov/RDEE/energy-resources/calculator.html>

## FIGURE 1

*John Day Fossil Beds National Monument 2007 Total (park operations plus visitors) Greenhouse Gas Emissions by Sector*



## TABLE 1

*John Day Fossil Beds National Monument 2007 Total (park operations plus visitors) Greenhouse Gas Emissions by Sector and Source*

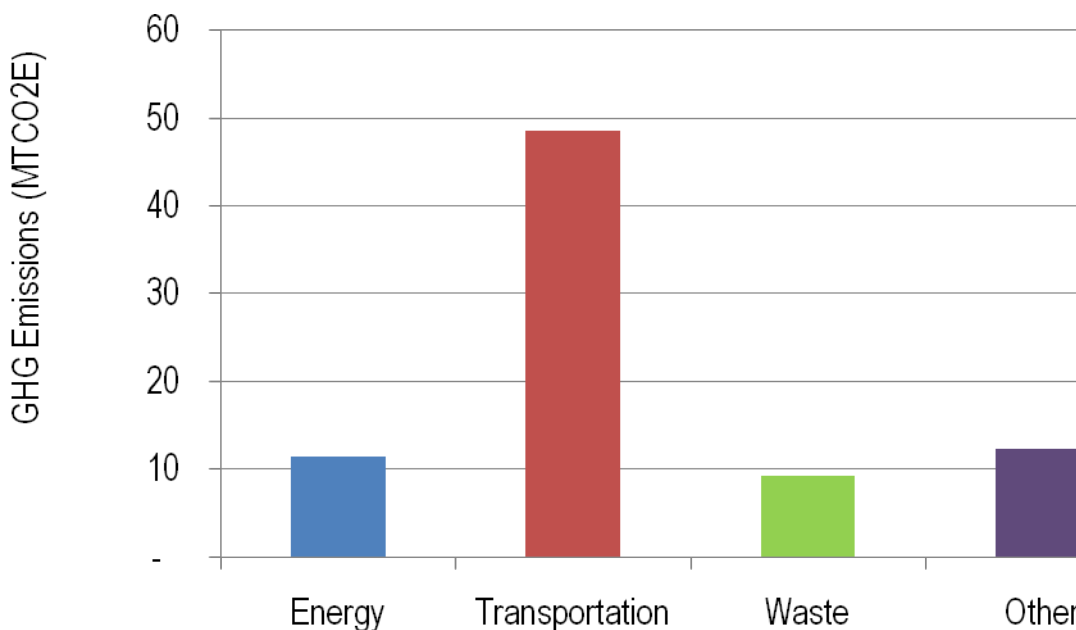
	MTCO2E
<b>Energy</b>	<b>11</b>
Stationary Combustion	11
Purchased Electricity	-
<b>Transportation</b>	<b>108</b>
Mobile Combustion	108
<b>Waste</b>	<b>9</b>
Landfilled Waste	9
Wastewater	-
<b>Other</b>	<b>12</b>
Refrigeration and Air Conditioning	4
Fertilizer Application	8
<b>Total</b>	<b>141</b>

Note - Totals may not sum due to rounding

Not applicable data sources represented by "-"

## FIGURE 2

*John Day Fossil Beds National Monument 2007 Park Operations Only Emissions by Sector*



## TABLE 2

*John Day Fossil Beds National Monument 2007 Park Operations Only Emissions by Sector*

	MTCO2E
<b>Energy</b>	<b>11</b>
Stationary Combustion	11
Purchased Electricity	-
<b>Transportation</b>	<b>49</b>
Mobile Combustion	49
<b>Waste</b>	<b>9</b>
Landfilled Waste	9
Wastewater	
<b>Other</b>	<b>12</b>
Refrigeration and Air Conditioning	4
Fertilizer Application	8
<b>Total</b>	<b>82</b>

Note - Totals may not sum due to rounding

Not applicable data sources represented by "-"

# John Day Fossil Beds National Monument Responds to Climate Change

*The following actions were developed during the North Coast & Cascade and Upper Columbia Basin Climate Friendly Parks Workshop on February 9<sup>th</sup> and 10<sup>th</sup>, 2010, in order to meet the park's climate change mitigation goals.*



## STRATEGY 1: REDUCE GHG EMISSIONS RESULTING FROM ACTIVITIES WITHIN AND BY THE PARK

John Day Fossil Beds National Monument has developed a set of actions that have been prioritized based on a qualitative assessment of a set of criteria including: emission reduction potential, cost-effectiveness, feasibility, co-benefits, regional impact, and ability to rapidly implement. Actions that John Day Fossil Beds National Monument will take have been presented below in order from highest to lowest priority within each sub-category.

### Energy Use Management

*Emission Reduction Goal: Reduce park operations' energy use emissions to 20 percent below 2007 levels by 2016.*

Improving energy efficiency and implementing alternative energy sources reduces park-based fuel use, lowers GHG emissions, decreases electricity consumption, and offers monetary savings for the park. Emissions inventory results indicate that 14 percent of the park's GHG emissions from park operations are from energy consumption. Presented below are the actions that are currently under way and which comprise the park's progress to date, as well as actions the park will pursue in the future.

#### Progress to Date

##### Behavioral Changes

- Developed and implemented operations and maintenance schedules to ensure the energy efficiency of buildings and infrastructure.
- Adjusted thermostat settings to set points of no more than 68 degrees in the winter and no less than 78 degrees in the summer.
- Set all computer management settings to ensure that all computers' power management settings follow current Energy Star recommendations.

##### Lighting

- Replaced all incandescent bulbs throughout the park with compact fluorescent light (CFL) bulbs or LED bulbs.
- Maximized passive solar energy and natural ventilation in the building sites for new construction such as Painted Hills and Foree Quarters.
- Utilized daylighting to minimize energy used to heat and light buildings in the Painted Hills Quarters.
- Installed motion sensors in all applicable buildings and spaces to ensure lights are on only when needed to reduce unnecessary electricity use.
- Installed energy efficient outdoor lighting throughout the park.

##### Heating, Ventilation, and Air Conditioning (HVAC)

- Utilized the park's Preventative Maintenance Schedule to ensure all components of HVAC are functioning at the optimum performance levels.

- Recalibrated thermostats according to the park's standard operating procedures.
- Utilized the Building Automation System to minimize building energy consumption for main park buildings.
- Disabled the reheat systems in buildings throughout the park during the summer months to reduce energy consumption.
- Developed an operational system to regulate the hot water boiler according to occupancy and demand.

#### Energy Efficient Electronics and Devices

- Established and implemented a procurement policy that meets and exceeds the Federal Energy Management Program guidelines, ensures that all new electronic/office equipment is energy efficient, and mandates that each device is used by the maximum feasible number of people to reduce redundancy.
- Set the default settings on all computers and copiers to double-sided printing.
- Tracked and displayed the energy consumption of electronic devices to encourage energy efficient use.
- Replaced existing boilers with energy efficient models in the Federal Fiscal Year of 2009.
- Installed three solar hot water heaters.

#### Improving Building Envelope

- Added window films to window in two buildings to reduce solar heating load.
- Improved building insulation in two buildings.

#### Alternative Energy

- Installed photovoltaic arrays in two locations within the park for a total of 35 kWh.
- Installed geothermal heating systems for both visitors centers.
- Established as policy that all current and new energy purchased for the park is and will be renewable energy.
- Replaced gas-powered Utility Terrain Vehicles with electric carts for maintenance operations within the main park headquarters area.

#### Other Energy Management Actions

- Incorporated energy efficiency criteria into new contracts for park and concessioner construction.
- Reviewed and began implementation of the DOI sustainable buildings implementation plan.

## Energy Use Management – Planned Actions



## 1 Promote energy efficiency and energy conservation in the park through behavioral change

- Encourage energy conservation in all park activities.
  - Educate employees to turn off computer, monitors, printers, backup battery units at the end of the workday.
  - Encourage energy conservation in all park activities by shutting off lights, using natural lighting, turning off electronics or setting to hibernate, etc, where possible.
  - Developing and implementing employee energy conservation education program implemented through e-mail, staff meetings and in-park training.

## 2 Upgrade lighting options

- Install dimmable ballasts and pair lighting with photosensors to reduce electricity use.
- Continue to consider building siting in future building construction to maximize passive solar energy and natural ventilation.
- Continue to use daylighting where possible to minimize energy used to heat and light buildings .
- Update current fluorescent and incandescent light bulbs to Light-Emitting Diode (LED) bulbs throughout all park facilities.

## 3 Switch to more efficient electronics and devices

- Install Smart Strip power strips to reduce idle electric use.
- Purchase Energy use displays/watt meters for each building in the park.

## 4 Improve building structures and envelopes

- Weatherize park buildings by increasing R-values to improve insulation effectiveness.
- Install window shading to reduce solar heating load.
- Upgrade older windows with an appropriate replacement type of window, storm window and/or window film. Historic windows will be restored in an approved manner to protect the historical integrity. Methods could include applying different options such as a window film, storm windows, or removing window panes and installing insulating panes.

## 5 Utilize alternative energy sources

- Install photovoltaic panels on park buildings, parking lots, open areas, etc where appropriate.
- Switch to biomass and biofuel instead of conventional fuel as appropriate and available to heat park buildings.

## 6 Measure energy use throughout the park

- Discuss purchasing only energy efficient and sustainably produced products available through GSA.
- Conduct an energy audit for all park buildings/structures. Partner with local utilities to conduct the audit.

## Transportation Management

*Emission Reduction Goal: Reduce park operations transportation emissions to 35 percent below 2007 levels by 2016.*

Reducing vehicle miles traveled, improving vehicle efficiency, and using alternative fuels can significantly reduce John Day Fossil Beds National Monument's emissions. As the inventory results indicate, GHG emissions from transportation comprise 60 percent of park operations emissions and 77 percent of the park's overall emissions (including visitors, and concessioners). Accordingly, in addition to the overall park operations emissions reduction goal, John Day Fossil Beds National Monument set a goal to reduce overall transportation emissions by 30 percent below 2007 levels by 2016. Presented below are the actions that are currently under way and which comprise the park's progress to date, as well as those actions that the park will pursue in the future.

### Progress to Date

#### Vehicle and Equipment Fuel Consumption

- Currently analyze fleet fuel consumption patterns for efficiency improvements on an annual basis.

## Transportation Management – Planned Actions

### 1 Transportation-related behavioral changes

- Prohibit visitor vehicle idling particularly in visitor parking areas.
- Encourage staff carpooling to and from work, along with carpooling for training purposes.
- Establish an employee bike-to-work program.
- Enforce reduced staff vehicle idling.
- Reduce meeting travel among staff by using webinars and teleconferencing technologies.
- Reduce mileage in park owned and government services agency vehicles through trip planning.

### 2 Reduce NPS vehicle and equipment fuel consumption

- Reduce fleet fuel consumption by leasing two hybrid vehicles to replace vehicles that accumulate the most miles annually.
- Promote efficient driving by obeying speed limits, etc among park staff.

- Investigate the availability of bio-fuel in the area to potentially convert to cars, trucks, and non-road equipment on alternative fuels.

### 3 Replace NPS vehicles and equipment

- Increase fleet fuel efficiency through replacement go exceed California's fuel economy standards through vehicle replacement..
- Use a Vehicle Allocation methodology (VAM) to achieve a fleet that is the right size and type. A VAM defines appropriate vehicle type and use for specific tasks and counters the tendency to size-up. Develop a vehicle replacement plan to right-size the fleet, improve efficiency, and switch to alternative fuels.
- Evaluate AFV options: hybrid electronic vehicles (HEV's), electric vehicles, compressed natural gas (CNG), and biodiesel for fuel use.
- Incorporate alternative fuel guidelines into fleet specifications.
- Replace 4-wheel drive with 2-wheel drive vehicles where appropriate.

### 4 Improve vehicle maintenance procedures

- Develop and maintain a maintenance schedule for vehicles.

## Waste Management

*Emission Reduction Goal: Reduce park operations waste emissions to 15 percent below 2007 levels by 2016 through waste diversion and reduction.*

The connection between waste and GHG emissions may not be obvious. However, proper waste management—in the form of source and solid waste reduction—can dramatically reduce GHG emissions. Landfills are the largest human-generated source of CH<sub>4</sub> emissions in the United States. Reducing the amount of waste sent to landfills reduces CH<sub>4</sub> emissions caused by decomposition as well as the GHGs emitted from the manufacturing of products along with transportation of waste. The less the park and its visitors consume in terms of products and packaging, the less energy is used and fewer GHGs are emitted.

John Day Fossil Beds National Monument's park operation activities emitted 9 MTCO<sub>2</sub>E from waste management in 2007. Diverting or reducing the park's waste stream through increased recycling efforts and waste management will reduce the amount of waste sent to landfills and resulting emissions. Presented below are the actions that are currently under way and which comprise the park's progress to date as well as those actions that the park will pursue in the future.

### Progress to Date

#### Behavioral Changes

- Currently implementing a recycling program to train park staff on source reduction, waste prevention, recycling, and composting.

#### Waste Prevention

- Implemented recycling waysides at each trailhead within park boundaries.

- Recycled all electronic equipment.
- Reduced visitor plastic water bottle use by verbally encouraging visitors to fill reusable water bottles from park provided water fountains.
- Currently implementing an itemized material tracking sheet to evaluate park purchases.
- Implemented a program where old equipment is donated to public schools and all departments are notified of surplus equipment within the park.

#### Waste Diversion (Recycling and Composting)

- Implemented recycling programs throughout the park to continually increase the amount of waste materials at the park that can be recycled.
- Improved waste collection transportation efficiency by purchasing and utilizing a two-ton trash compactor.
- Interpretive rangers currently address the public about recycling and waste reductions.
- All spent propane cylinders are refilled rather than disposed in a solid waste site.
- Currently practice environmentally responsible deconstruction.
- Implemented a program to ship recycled fluorescent bulbs to an authorized recycling center.
- Implemented a program to recycle all oil used in the park's automobiles.
- Currently measure and report baseline solid waste generation annually.

#### Green Procurement

- Increased the recycling content of purchased materials.
- Currently encourage contractors to practice green procurement through acquisition regulations written into contracts.
- Distributed a form which that assists the park in developing written justifications for green products.
- Established purchasing requirements for low/no-VOC insulation materials.
- Installed carpets with high recycled contents.
- Inventoried and substituted all cleaning supplies with non-toxic products.

## Waste Management – Planned Actions

### 1 Decrease waste through behavior change



- Train staff on green procurement practices.

## 2 Establish new plans and policies that promote waste reduction

- Replace paper towel dispensers with energy efficient automatic hand dryers.
- Reduce waste generated at meetings and employee functions. Establish and implement guidelines in the following areas:
  - Evaluate the need for bringing materials to meetings;
  - Utilize electronic communication for agenda and notes tracking (as opposed to printed materials), use durable, reusable utensils and mugs; buy materials in bulk;
  - Use items with reduced packaging;
  - Provide easy-access to recycling receptacles.
- Promote the use of recycled content products and materials procurement to field charge card purchasers, procurement, and supply and requirements personnel within the NPS.

## 3 Implement recycling and composting practices

- Compost/recycle yard waste.
- Institute alkaline, lithium battery recycling locations in every office building.
- Co-locate trash and recycling bins.
- Investigate and establish food composting with residents to include small scale opportunities.

## 4 Reduce waste through green procurement

- Purchase locally produced materials whenever possible.
- Use post-consumer recycled paper in all park publications.
- Inventory all cleaning supplies and develop a list of non-toxic, green and local sources for purchase card holders.
- Establish purchasing requirements for computers, fax machines, printers, scanners, and other office electronic equipment.

## 5 Reduce and reuse wastewater

- Install low-flow faucets to replace traditional flow faucets, throughout the park.
- Install as needed water efficient technology for toilets, e.g., composting toilets and water less urinals.
- Conserve water used in ground maintenance by planting drought-tolerant grass and native plantings.
- Reduce storm and groundwater runoff by increasing infiltration and bioremediation strips/swales. Minimize changes to topography.

- Monitor, manage, and reduce non-point wastewater.

## 6 Other waste management actions

- Develop and implement a Construction Waste Management Plan that includes source reduction as the priority practice.
- Manage solid waste and recycling by developing an Integrated Solid Waste Alternatives Program (ISWAP) and make it available to employees and visitors.
- Track and report landfill and recycling data to monitor reductions and success in diverting waste from the landfill. Included this information into our EMS goals.
- Purchase equipment to reduce volume of waste and recyclables, e.g. shredders for plastic and crushers for aluminum. Install trash compactors for mixed waste.

## STRATEGY 2: INCREASE CLIMATE CHANGE EDUCATION AND OUTREACH

Climate change is a complex and easily misunderstood issue. John Day Fossil Beds National Monument can play an integral role in communicating climate change to a vast audiences. A better understanding of the challenges and benefits of reducing GHG emissions can motivate staff, visitors, and community members to incorporate climate-friendly actions into their own lives. John Day Fossil Beds National Monument recognizes that the greatest potential impact the park can have on mitigating climate change is through public education. Thus, the park sees public education as an end goal of any climate initiative. From increasing the efficiency of public transportation to developing a green purchasing program, the actions John Day Fossil Beds National Monument takes to address climate change serve as opportunities for increasing the public's awareness of climate change. Actions that are currently under way and which comprise the park's progress to date, and those actions that the park will pursue are presented below.

### Progress to Date

#### Climate Friendly Parks Team

- Incorporated climate change information into existing park brochures.
- Developed site-specific climate change interpretive narratives relevant to JODA's specific paleontological resources and incorporated them into existing formal, informal and non-personal interpretive services.

#### Climate Change Education

- Superintendent distributes a yearly review which is available to park staff and visitors about electricity usage throughout the park for educational purposes.
- Chiefs of interpretation and paleontology provided site-specific information on the climate change story described in the fossil record and provided comparisons to our understanding of current climate science during seasonal interpretive training, with the goal of including a climate change message in every interpretive program offered at JODA.



- Chief of interpretation ensures distribution of products produced by the Climate Change Response Program to interpretive staff, who in turn develop interpretive opportunities for park visitors.

## Communications – Planned Actions

### **Incorporate climate change into park staff training, events, and performance plans**

Developing a climate change education program for park staff is vital to increasing awareness about climate change among park visitors and fostering a sense of collective responsibility among staff to help reduce park emissions. By incorporating climate change education into staff development programs, John Day Fossil Beds National Monument will enable its staff to demonstrate their commitment through leading by example, and providing visitors with the tools and resources they need to reduce GHG emissions in the park and in their own communities. Potential actions include:

- Create a park Climate Change Policy Memo specific to John Day Fossil Beds National Monument.
- Incorporate climate change issues into the employee handbook.
- Include the science and impacts of climate change into park education tools.
- Incorporate sessions on climate change into new staff training.
  - Provide training for current and new custodial staff on minimizing the use of current cleaning products (i.e., chemicals and plastic garbage bag) and encourage the use of reusable cleaning materials (i.e., rags instead of paper towels).
- Develop communication strategy to inform staff about climate-friendly actions.
- Communicate the park's waste policy or ISWAP to staff regarding recycling, green procurement, and other aspects of the park's waste management policy to staff.

## Visitor Outreach

John Day Fossil Beds National Monument realizes that it has a unique opportunity to educate the public in a setting free from many of the distractions of daily life. By using existing materials, developing park-specific materials, highlighting what the park is currently doing about climate change, and encouraging visitors to reduce emissions, John Day Fossil Beds National Monument can play an important role in educating the public about climate change.

John Day Fossil Beds National Monument staff recognize the many different audiences that visit the park, including recreational and non-recreational park visitors, "virtual visitors" who visit the park online, school-aged visitors, local and out of town visitors, local tribes, and external audiences. Reaching these various audiences with climate change information and engaging them in the park's efforts requires appropriately focused messaging. The park has developed a number of strategies to reach these various audiences effectively. These strategies include:

Integrate climate change themes into interpretive programs. Develop interpretive talks addressing climate changes such as:

- Its relevance to the paleontological story preserved in the fossils of the John Day Fossil Beds,
- How the prehistoric climatic record differs from the phenomenon we are experiencing today,
- Illustrate the potential impacts of climate change on the region.
- Develop and post signs promoting park's efforts to curb emissions.

- Communicate with local communities, park visitors, and local media about actions they can take to reduce GHG emissions.
- Promote green tickets for purchase to reduce visitor's carbon footprints and educate about climate change and carbon reduction strategies.
- Consider hosting a climate change traveling exhibit.
- Develop signage to place in park's remote sites.
- Include climate change issues and their relevance to the paleontological resources of JODA messaging in Junior Ranger Program.
- Create demonstration projects and exhibits to convey park sustainability message to visitors.

### Local Community Outreach

The gateway communities, agencies, vendors, and volunteers surrounding John Day Fossil Beds National Monument can play a significant role in supporting the park's climate change mitigation goals. As such, when appropriate, park staff will assist local communities with incorporating climate change messages into community events and find partners to promote climate change education at those events. The park will also engage with surrounding agencies to coordinate effective outreach and education efforts.

## STRATEGY 3: EVALUATE PROGRESS AND IDENTIFY AREAS FOR IMPROVEMENT

By taking the actions established in strategies 1 and 2 above, John Day Fossil Beds National Monument plans to reduce its emissions to the specified goals. Achieving these goals will require an ongoing commitment by the park, which may include subsequent emission inventories, additional mitigation actions, and reevaluation of goals. As part of this strategy, John Day Fossil Beds National Monument will:

- Monitor progress with respect to reducing emissions. This will include subsequent emission inventories to evaluate progress toward goals stated in this action plan.
- Develop additional emission mitigation actions beyond those listed in this plan.
- Periodically review and update this plan.
- John Day Fossil Beds National Monument will track climate-friendly actions through the Environmental Management System.

## CONCLUSION

John Day Fossil Beds National Monument has a unique opportunity to serve as a model for over 120,000 recreational visitors annually.<sup>4</sup> This report summarizes the operational actions the park commits to undertake to address climate change. Specifically, the park realizes its ability to educate the public and serve as a valuable model for citizens. By actively reducing addressing GHG emissions within the park and sharing its successes with visitors, John Day Fossil Beds National Monument will help mitigate the effects of climate change far beyond the park's boundaries.

The National Park Service faces an uncertain future due to the possible effects of climate change. However, by seriously addressing climate change impacts and reducing emissions, John Day Fossil Beds National Monument will reduce its contribution to the problem while setting an example for its visitors. The strategies presented in this Action Plan present an aggressive first step toward moving John Day Fossil Beds National Monument towards becoming a Climate Friendly Parks.

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<sup>4</sup> John Day Fossil Beds National Monument: Park Statistics. Available online at: <http://www.nature.nps.gov/stats/viewReport.cfm>

# APPENDIX A: LIST OF WORK GROUP PARTICIPANTS