National Park Service
U.S. Department of the Interior

Interpretive Development Program
Climate Change Response Program

Interpreting Climate Change

Module 4 – Learning Companion
Appropriate Techniques and Strategies

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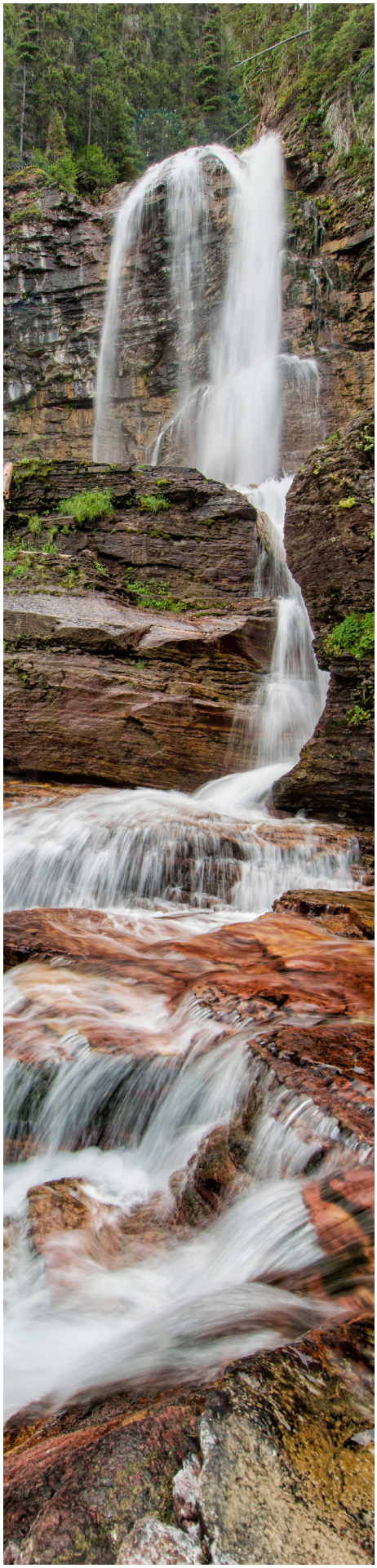
Apply Foundational Interpretive Knowledge

As interpreters acquire their climate change knowledge – including both knowledge of the resource issue and knowledge of the audience -- they build a basis to apply their foundational interpretive knowledge, and then can begin to develop and apply more advanced techniques and skills for interpreting critical and controversial issues. Interpreting an issue as complex as climate change must begin with a solid understanding of basic interpretive theory, and the ability to meet core professional standards for effective interpretation. Namely, the primary goal for interpreters is to provide opportunities for audience members to form their own connections to the meanings of the site's resources, resource issues, and resource stories. To do this, interpreters must be able to apply their interpretive knowledge to incorporate knowledge of the resource issue and knowledge of the audience in the following foundational ways:

- **Knowledge of the Resource Issue**
  - Translate and interpret the scientific process and climate science
  - Link to site-specific natural and cultural resource issues, impacts and implications (current or potential), and contextual stories
  - Identify links to resource meanings—a full understanding of the potential meanings related to climate change at your site will involve both significance (societal/cultural meanings) and relevance (personal meanings)
- **Knowledge of the Audience**
  - Use knowledge about audience thoughts, beliefs, perceptions, attitudes, experience, and science and climate science literacy to determine communication strategies and present/develop relevant meanings
- **Appropriate Techniques**
  - Match knowledge of appropriate interpretive techniques/methods and venues to audience needs, interests, and experience related to climate change
  - Use appropriate forms of communication and engagement strategies for different needs/functions



Apply Foundational Best Practices

When interpretation is fully effective, it seldom happens as a happy accident – it is the result of professional craftsmanship, as an interpreter applies their knowledge in specific and intentional ways. Even informal and spontaneous contacts with visitors require preparation, skill and application of interpretive foundations. A thoughtful and intentional approach becomes even more important with a critical issue such as climate change. The foundational strategies for crafting interpretive opportunities related to climate change should include the following best practices:

- **Develop goals and objectives** for individual programs and products that link to broader site goals and climate change communication strategies. Determine how your product will address site needs, audience needs/interests, and societal needs.
- **Provide opportunities for both intellectual and emotional connections to the meanings of climate change.** Providing both kinds of opportunities will provide the greatest likelihood that audience members will come to care more about the issue and its effects. The crafting of intellectual opportunities related to climate change can range from providing opportunities for basic awareness to in-depth understanding and insight. Emotional connections might range from opportunities to feel curiosity to deep concern, and important opportunities to feel hope and empowerment. Knowledge of the audience is extremely important when determining interpretive objectives and crafting opportunities. For some audiences and situations, be aware when just providing basic awareness and relevance will be the most appropriate approach.
- **Select techniques** that are appropriate for the resource and the audience, as well as your personal style. Do not be afraid to try new or more advanced techniques, such as those discussed later in this curriculum, but always consider their appropriateness and monitor their effectiveness.
- **Be flexible:** Prepare and practice the ability to change direction if needed, with a variety of resource meanings and interpretive approaches/options in your tool kit. Learn to adapt for different situations and to meet audiences where they are in their current understanding and perceptions of climate change.
- **Make it real:** Use the power of tangible, observable resources as much as possible—facilitate experiential opportunities that engage visitors with their surroundings and especially resources and landscapes that are most at risk or threatened by climate change. Know when to stop talking and let the resource speak for itself—make the resource the center of attention, rather than yourself.
- **Seek feedback:** The most effective interpreters continuously seek feedback – from peers, supervisors, resource experts, and, most importantly, from visitors themselves. An interpretive product can always be improved, along with the skills of effective delivery and communication. This feedback loop is more important than ever when interpreting an issue like climate change.

Provide Opportunities for Relevance and Engagement

As discussed in the introduction to this curriculum, parks should plan to provide a range of engagement experiences that facilitate opportunities for audiences to 1) explore the significance of climate change related to site resources and stories, and the implications to broader social and global significance, and 2) discover the relevance of climate change as it pertains to their personal lives and experience. Due to the critical and potentially controversial nature of this topic, the interpretive strategies that will be most effective will be those in which audience autonomy is respected, and visitors are included as co-creators of their interpretive experiences. The role of the interpreter in this type of programming will rely more on facilitation skills than on traditional, one-way presentation skills, and the overarching goal will be interpretation with visitors rather than for them. The content in the rest of this module will explore best practices and advanced skills interpreters need in order to provide a range of audience engagement opportunities. See **Appendix I** for a list of potential venues for incorporating climate change interpretation.

Opportunities for Audience Engagement

To effectively engage audiences with the issue of climate change, interpreters will need to enrich audience experiences in the following ways.

Connection – This is the heart of all interpretation, providing opportunities for audience members to connect to resource meanings, including both resource significance and personal relevance. In applying the advanced skills of engagement and co-creation, interpretation that guides audience members to discover connections to the meanings of climate change, rather than telling them what to think or feel, will be more likely to foster changes in attitude or behavior.

Reflection/Expression – Reflection is the time when a visitor transforms ideas and experiences, both present and past, into personal opinion and thoughts. Expression is the time when a visitor articulates and shares personal opinions and thoughts with others. When interpreting a difficult issue like climate change, the opportunity for

audience members to both reflect upon their experience and express their opinions, beliefs, and values in a safe environment without fear of judgment or criticism is very important. Reflection can be useful to add depth to expression and bring meaning to action.

Visitors who may be categorized as "concerned" and "cautious," two of the categories within the Six Americas most likely to visit parks, can benefit from reflective moments in programs that allow them to analyze the issues and see themselves as empowered participants in further discussions and actions.

We do not learn from experience…we learn from reflecting on experience. ~John Dewey

For a list of specific techniques related to reflection and expression, see the *Co-creation Techniques for Interpreting Climate Change* handout from the Module 4 study guide. For additional guidance on reflection techniques, see **Facilitating Reflection – A Manual for Leaders and Educators**.

Participation – The opportunity to engage in activities within the site, with park rangers, scientists, other visitors, etc., in a way that is actively experiential, provides greater context and awareness of the issues, and fosters a stewardship ethic. Participation can occur during a traditional program or as a stand-alone activity. Learning theory for both adults and children supports the notion that hands-on activities provide a more conducive foundation for learning than lecture-based approaches. Therefore, parks should strive to provide an inviting environment that is rich with opportunities for participation, replacing didactic presentations with resource-based experiential learning opportunities wherever possible. Participation that allows the audience to feel a sense of contribution, to see some result of their input, and be guided to connect their contribution to larger meanings and relevance will be especially engaging. Participatory activities related to climate change might include:

- Citizen science–wildlife or weather observations, water and air quality monitoring, mapping, exotics mapping and monitoring, etc., with mechanisms for immediate input of observations – see the how-to guide developed by Great Smoky Mountains NP or at **http://www.birds.cornell.edu/citscitoolkit/toolkit**
- Stewardship projects–restoration, exotics removal, nursery activities, and many types of mitigation or adaptation projects
- Role playing activities–can be for all ages to better understand differing impacts and perspectives about climate change
- Games and kinetic exercises that help physically animate the concepts of climate change, especially as related to on-site resources
- Physical and electronic bulletin boards for immediate input on issues
- Photo, poetry, art contests, and discussions on entries
- Activities and communities staged on Facebook, Flickr, or blogs

Action – When appropriate, encourage visitors to take action beyond the interpretive encounter or their park experience, taking what they learn, see, do, experience home with them and engaging their friends and family. Be prepared to offer options, resources and a range of audience-appropriate ideas that foster a sense of empowerment and hope. Share personal experiences and park examples of ways to "make a difference." However, always approach these suggestions provisionally and avoid a preachy, self-righteous, or guilt-trip tone. Visitors need to be ready to make the leap to personal, self-directed action, which most likely develops with cumulative exposure to meaningful experiences, and is not likely to occur from the impact of any single interpretive experience, no matter how effective. See **Appendix II** for a list of actions that parks are engaging in to reduce their carbon footprint and that provide opportunities for visitors to do the same while at a national park or back at home. Additional ideas can be found on the **Get Involved** section of the NPS climate change website.

Partnering – Partnering is a type of action on a deeper level that involves visitors' self-motivation to join us in the conservation effort; this may include building a relationship with the park, the park's friends groups, or other partners, to help foster public engagement, learning and stewardship. Once again, be prepared to provide ideas, options, resources and contacts for further investigation, so that, if ready to engage at this level, visitors will have the information they need to self-direct.

Advanced Co-creation Skills

Special skills are needed to provide the kinds of audience-centered opportunities described above, and to overcome communication barriers and challenges of topics like climate change. The advanced skills of interpretive facilitation, embracing controversy, using frames, and providing empowerment through hope and action, will help interpreters provide the most effective range of audience-centered interpretive opportunities.

Interpretive Facilitation Skills

Although it is possible for well-crafted didactic-style presentations to provide opportunities for some visitors to understand and care personally about climate change, this is not the most effective type of communication to reach a broad audience. The use of facilitation and co-creation techniques, on the other hand, will encourage a much broader range of visitors to care more about the issue or to take a personal interest in the threats that climate change presents to preserving the site's resources. In addition, by providing audiences with opportunities for constructive dialogue and exchange, our sites become places where proactive citizenship skills can be modeled, learned and practiced.

Some interpreters have natural abilities as facilitators and routinely incorporate opportunities for discovery, reflection, individual expression, and group conversation and co-creation into all their programming. For other interpreters who rely more on didactic presentations, the development of facilitation skills will represent an advanced technique requiring a significant shift in approach.

Some of the common differences between a presenter and a facilitator are listed below:

Presenter	Facilitator
Transmits information	Guides discussion for self-discovery
Provides the right answers	Provides the right questions
Relies on one-way communication	Relies on two-way communication
Is primarily self-focused	Actively focuses on the resource and visitors

An interpretive facilitator is a leader or guide who enables a group to discover a big idea, gain insight about different perspectives, or identify and achieve a mutual goal. Interpretive facilitation…

- Helps group members find personal relevance
- Enables discovery and new insights
- Brings the outcome out of the group, leads them to unwrap it for themselves to foster ownership
- Guides and adjusts based on the cues and characteristics of the audience
- Creates a safe and encouraging environment for dialogue and participation
- Defers skepticism by enabling self-exploration and analysis of pre-held opinions

These skills require interpreters to think on their feet and be flexible while still providing a clear and meaningful overall focus for the program or exchange. Interpreters should have a "toolbox" ready with interchangeable tools and techniques for various situations and audiences.

Facilitation can be used in a broad range of venues. For example, a stop on a nature walk might provide an opportunity to let the audience discover and discuss the visible effects of climate change in a program with a broader theme about human-caused resource impacts. Or perhaps a conclusion to a campfire program uses a facilitated gathering technique, drawing on the group's experiences to shape an audience-centered take-home message about energy conservation. An informal visitor contact, at the information desk or while roving trails, provides the perfect opportunity to facilitate a meaningful conversation about climate change, providing a chance for visitors to express thoughts and feelings. The most challenging and potentially effective form of interpretive facilitation is a program format called a "facilitated dialog," which uses a strategically designed set of questions – an "arc of dialogue" -- to guide participants into a structured, meaningful conversation about a critical or controversial topic.

"Creating space for community and personal dialogues around climate change is critical because of the ways that people understand, assess, and respond to risks. Values, ideologies, and peer groups influence risk perceptions and attitudes more than facts do. As a result, people need opportunities to co-explore the risks they face with trusted messengers and peers, and work together to develop ideas for responding to them… Many people want to talk about climate change but don't know where to have a safe conversation about it with people they trust."
(Cara Pike, Climate Access **Blog Post**, August 26, 2013)

Theme Questions – A Great Place to Start

If the notion of interpretive facilitation is new to you, a great way to "stick your toe in the water" is through a slight tweak of traditional programming. Consider using a question as the guiding theme for your program, rather than a theme statement. A theme question introduced at the beginning of your program immediately sets a tone of co-discovery, an opportunity to investigate the answer together with your audience. Use additional sub-questions sprinkled throughout the program to encourage the discovery process and audience response. As you feel comfortable, allow the direction of the discovery process to be determined by audience interests; then bring the program to a meaningful conclusion by weaving in some of the audience thoughts on possible answers to the theme question – or just leave it hanging and encourage the audience to continue the discovery process on their own. For an example of a theme question see the Joshua Tree NP example later in this document.

In whatever venue or context, good interpretive facilitation always uses well-crafted questions, effective listening skills, and relies on a genuine desire to let audience members participate as co-creators of their experiences.

For more information and skill development on facilitation and dialogue, see the *Interpretive Facilitator's Toolkit* and other resources listed at the end of this module -- and engage in a discussion of trends and ideas with your colleagues at the **climate change Facebook** group.

Embracing and Interpreting Controversy

How do we interpret a controversial topic like climate change without stirring up conflict? And how do we interpret in a way that is inclusive and respectful of our whole audience?

Most communication is intended to be persuasive. It is a matter of defining the objective: to advocate a particular point of view or to explore multiple points of view. The latter is to some degree not habitual and so must be learned and practiced to be done well. An interpreter who approaches communication as a "contest" to "win" will likely have little success in facilitating others finding their own connections to resources and their meanings (Sikoryak 2005).

As discussed in the Module 1 Introduction to this curriculum, critical resource issues like climate change are, by their very nature, controversial. This should not, however, prevent interpreters from engaging visitors on the issue. An issue becomes controversial when people care about it. It means that they have thought about it enough to start to form an opinion about it. It means that they are becoming engaged or are already interested in the issue. It means that the issue is relevant to their lives.

There is little disagreement that critical and controversial resource issues should be interpreted. There is also universal agreement that interpreting these issues effectively can be challenging when controversy is present. Having one bad experience with a confrontational visitor can scare even the most talented interpreter into avoiding the issue entirely. However, controversy is not something that should be avoided. Rather, it can be embraced and harnessed as an interpretive tool and an opportunity to learn more about different audience perspectives. Controversy, along with the relevance, passion, and energy it generates, can be used to help visitors make deep personal connections to resources meanings and engage in other points of view. Using a suite of appropriate facilitation techniques, interpreters can effectively provide a safe environment for visitor discourse while leveraging the controversy to provide greater understanding or appreciation of climate change and the affected resources.

Skills Necessary for Embracing Controversy

Understand and respect multiple perspectives: Harnessing the controversy of climate change requires interpreters to recognize, acknowledge, and truly respect the concept of multiple perspectives. If interpreters do not, in their hearts, respect the rights of visitors to hold a different perspective, anything they say will appear condescending or insincere.

- Acknowledging multiple points of view does not require interpretive and educational programs to provide equal time to all points of view or to disregard the weight of scientific or historical evidence.
- Interpreters should know the difference between explaining a perspective and advocating it. There are very few instances where there is an "official, government explanation" of specific events or causes. For example, care should be taken not to mislead the public into thinking that NPS interpreters are presenting the "authorized, final version" of history or science. They are presenting multiple perspectives—and their understanding of the context of those views through sound scholarship.

Meet the visitors where they are: Interpreters must be prepared to respect the fact that visitors have every right to believe whatever they want. It is also important to recognize that individuals who choose not to accept climate change science, who do not agree with the agency position, or who lack scientific or climate literacy have as much right to experience and love a site's resources as anyone else. According to the Visitor Bill of Rights (NPS Foundations of Interpretation), all visitors have a right to:

- Have their privacy and independence respected;
- Retain and express their own values;
- Be treated with courtesy and consideration;
- Receive accurate and balanced information;
- Have a meaningful experience with the site's resources.

Appropriately represent the site's official position: It is important that interpreters represent the official position of their agency/organization honestly and transparently. In the NPS, interpreters should familiarize themselves with the Climate Change Response Strategy (September 2010) and the official position of the agency regarding the issue of climate change. (See the overview in the Module 1 Introduction to this curriculum.)

Provide a safe and respectful environment: It is imperative to provide a safe environment for interpreting challenging issues like climate change. Some of the techniques that enable an interpreter to do this include:

- Model good questioning by using open-ended questions and avoiding those with "right or wrong" answers. Questions should challenge people to think critically and engage their values or beliefs without judgment.
- Allow people to voice multiple perspectives
- Encourage audience members to show respect to differing ideas/opinions
- Keep things site specific and place based
- Practice active listening
- Wait after questions to provide time for processing
- Share stories; make it personal
- Be able to identify when visitors are trying to bait the interpreter into an argument and learn how to quickly diffuse it
- Provide the proper level of authority to avoid stifling conversation or losing control
- Mediate discussions using facilitation techniques to open, or improve, dialogue between individuals with disparate views, aiming to help the parties reach an understanding and appreciation for alternative viewpoints.

Use the relevance, passion, and energy of controversy: Controversy is derived from difference but does not have to threaten mission. Resources possess multiple meanings that can be viewed from multiple perspectives. Audiences can and should be encouraged to connect their perspectives to the resource meanings that are most relevant and provoking to them. It is the diversity of resource meanings that provides the possibility of constituency building and a growing stewardship ethic. Audiences can disagree about climate change but still agree that park resources are worthy of care. Controversy indicates the presence of passion and the possibility of preservation.

Use facilitation techniques that turn debate into discussion. Use universal concepts and frames to provide broad relevance, even for those with disparate perspectives. Create strategies ahead of time for a variety of potential audiences and situations. With such preparation, a thoughtful interpreter can almost always preempt conflict and turn controversy into an opportunity for connection.

Frames for Climate Change

One strategy that is frequently discussed in the literature related to communicating climate change is the concept of "framing" the issue in appropriate and effective ways. Framing an issue can be an effective way to interpret a controversial issue or to engage people in stewardship.

According to Jim Covel, former president of NAI, "The frame around a photo or painting has a lot to do with how much of the image we see and can influence the way we perceive the image. Applying that concept to cognition, you might say that we have frames in our minds composed of values, beliefs, experiences, education. Those mental frames can heavily influence what aspects of an issue you attend to, how you perceive events and issues, and how you respond to the world around you… We can increase our effectiveness by framing an idea or issue using values and perspectives that resonate with our audience." (NAI Blog, 2011)

Nisbet (2009) writes in Environment: Science and Policy for Sustainable Development "to break through the communication barriers of human nature, partisan identity, and media fragmentation, messages need to be tailored to a specific medium and audience, using carefully researched metaphors, allusions, and examples that trigger a new way of thinking about the personal relevance of climate change." Frames help people discuss and make sense of an issue by focusing attention around a specific aspect of the issue. For example, climate change discussions can be framed around the idea of economic development or of morality and ethics.

Framing is not a new concept and relates closely to interpretive theory. A single frame can be used effectively as the core of an interpretive theme (or theme question) on which to build a program or media product, or frames can be used to provide smaller reference points of relevance and engagement within a program or product.

To successfully frame an issue in a way that is most meaningful to a broad audience, it is important to understand what concepts are more relevant to them. In the Six Americas report, the authors identify worldviews or values and types of messages that resonate best with each of the six segmented groups. Finding areas of common ground and framing climate change discussions around those areas can be a powerful way to engage visitors. For example, regardless of which segment a person belonged to, most respondents to the survey indicated that they "always" or "often" make energy-efficient improvements to their homes. This response shows that the economic efficiency frame would resonate across a wide range of audiences. However, this frame is only relevant if it has a connection to park resources. Using a frame that has no connection to your site may be perceived as disingenuous and will not be as effective as a frame that connects to your site's resources and stories, which are the reason the audience is there in the first place.

Examples of climate change frames that are positive, proactive and potentially audience-relevant include:

- Human health and safety
- Sustainable economic prosperity
- Energy costs/energy savings
- Family -- responsibility to future generations
- Ensuring national security
- Agriculture and food impacts
- Threat of wild fires
- Catastrophic weather events
- Green job creation
- Personal enjoyment – caring for the places we love
- Ethics and morality – doing the right thing
- Parks as places of spirituality
- Beauty, art and wisdom displayed in natural systems

Examples of potential strategies and techniques for interpreting the significance and relevance of climate change

The following examples follow through from the Learning Companions for Module 2 (identify site significance connections to climate change) and Module 3 (connect site significance to audience relevance related to climate change). Those same examples are listed here with the addition of one or two suggestions for interpretive venues, strategies or techniques to engage the audience with those climate change meanings. These are just offered as suggestions – there are many other possibilities for climate change stories and strategies at each of these sites. These examples are intended to help you think about the possibilities at your site.

- Glacier National Park
  - Significance to site resources – climate change is resulting in glacial recession and loss of alpine meadows
  - Relevance to site audiences – climate change is resulting in changing visitor experiences; our children will not be able to bring their children to see a glacier; some animals and flowers we enjoy seeing will become scarce or disappear; but we can use this park as an opportunity to learn from the past in order to make a better, more sustainable future for our children. Universal concepts: loss, change, beauty, consequences, family, sustainability, learning, future, hope
  - Possible strategies and techniques – Casual observation/reflection/expression-- at a stop on a nature walk, plan to point out and discuss a glacier, flower or animal that may be threatened by climate change; encourage visitors to observe and reflect, and then facilitate a casual conversation (in which there are no wrong answers) allowing them to share thoughts about how this loss, and other climate-related losses, might impact the future experience of their children/grandchildren.

- Joshua Tree National Park
  - Significance to site resources – climate change is resulting in the loss of habitat suitable for Joshua trees
  - Relevance to site audiences – Deserts are places that teach the difficult lessons of adaptation and challenge the ability of every species to survive, including humans. What wisdom can we gain that may help us adapt and survive the changes caused by a shifting climate? What does the potential loss of the park's namesake species mean to us as humans? Universal concepts: adaptation, survival, loss, extinction, uncertainty, challenge, wisdom, hope
  - Possible strategies and techniques – Theme question – for an illustrated campfire program, develop the entire program around the theme question "What does the potential loss of the park's namesake mean to different species of plants, wildlife and to us as humans?" Invite interested audience members to stay around the campfire after the formal program to share and discuss each other's perspectives.

- Everglades National Park
  - Significance to site resources – climate change is contributing to sea level rise and its impacts on wildlife, ecosystems, and human communities
  - Relevance to site audiences – There are many reasons why humans have always built communities close to the sea and why we love to visit here. How will sea level rise change our communities? How will we interact with ocean ecosystems in the future? Universal concepts: community, cherished experiences, mystery and wisdom of the sea, change, endangerment, adaptation, hope
  - Possible strategies and techniques – Observation, imagination and reflection– Develop a wayside exhibit to be placed near a spot frequented by local visitors, with a vista of buildings or roads that may be threatened by sea level rise and/or heightened storm surge. Include artwork illustrating the potential for inundation over the next 20 years. Ask a question in the text of the wayside encouraging visitors to imagine/visualize how these changes will impact the lives of people living and working in these areas.

- Fort Point National Historic Site
  - Significance to site resources – the experience of the soldiers stationed here during the civil war can help inspire and teach us today how to effectively address our emotions around climate change
  - Relevance to site audiences – The challenging environment in San Francisco for the soldiers forced them to find ways to improve morale in the face of dreary, damp, uncomfortable conditions. Additionally, upon hearing of the onset of the Civil War, these soldiers undoubtedly faced an emotional crisis as they were asked to prepare to defend against an enemy that may never come while their friends and family fought and died 3,000 miles away. Many people may struggle with feelings of hopelessness and futility around climate change. The experience of the soldiers of Fort Point can inspire us to work together to seek a common purpose and find within us the strength and hope to continue to fight the battle against climate change. Universal concepts: loss, change, despair, hopelessness, hope, family, common purpose, future
  - Possible strategies and techniques – Reflection/expression—while in the fort ask visitors to imagine how they may have responded emotionally to the news of the Civil War, or how they may have tried to overcome the uncomfortable nature of life in the fort to maintain high spirits. Facilitated dialog works quite well with audiences in this setting to explore the comparison between the feelings the soldiers struggled with as well as those we do today.

- John Day Fossil Beds National Monument
  - Significance to site resources – modern anthropogenic climate change can be understood by comparing rates of change between the fossil record and today
  - Relevance to site audiences – The fossil record indicates that ancient species were affected by periods of changing climates, sometimes resulting in death and extinction. Does paleontology offer us glimpses of doom and gloom as we attempt to grapple with modern climate change or is there evidence for hope? Universal concepts: change, death, extinction, science, value, discovery, hope
  - Possible strategies and techniques – Compare/contrast and reflect – for an article in the park newspaper, develop graphic illustrations showing the rate of climate change that research indicates is reflected in the fossil record vs. the rate of climate change that research indicates has been happening since the beginning of the Industrial Revolution. Ask readers to reflect on the question, "Does paleontology offer us glimpses of doom and gloom as we attempt to grapple with modern climate change or is there evidence for hope?" Do not provide an answer – leave it hanging.

- Montezuma Castle National Monument
  - Significance to site resources – changing climates have had consequences for cultures and civilizations of the past
  - Relevance to site audiences – Archaeologists have postulated that ancient cultures may have abandoned this place because of an increasingly harsh climate and competition for scarce water and food. Do we view the fate of past cultures as simply "ancient history" or does their experience link to our own? Universal concepts: survival, mystery, consequences, scarcity, competition, adaptation, hope
  - Possible strategies and techniques – Compare/contrast with modern day examples of people needing to change where/how they live due to changing conditions (flooding, hurricanes, etc). Integrate reflection activities about changes people have made in their own lives, and discussion about how it might feel to be forced to leave your home. Develop waysides illustrating the dramatic climatic changes that may have forced the Sinagua to abandon the site and questions about our own future in the face of modern climate changes.

- Thomas Edison National Historic Site
  - Significance to site resources – the transformative power of scientific innovation has had both negative and positive ramifications related to climate change
  - Relevance to site audiences – As humans struggled to create a better world in the 1800s through technological inventions like automobiles, factories, and electric lighting, did they realize the long term environmental impacts of their actions? Today we look to technology as well to help us address climate change and continue to create a healthier world to live in. Universal concepts: awareness, insight, consequences, regret, empathy, family, sustainability, future, hope
  - Possible strategies and techniques – Facilitated dialogue for 11th grade US history education program – following a tour of Edison's lab (as the shared experience), students participate in a facilitated dialogue to address the ways in which Edison's inventions have been both a blessing and a curse, and share their thoughts and concerns for a "brighter" future.

- Antietam National Battlefield
  - Significance to site resources – the carbon footprint of the Army of the Potomac can be compared to help us grasp the scale of the carbon footprint of modern society
  - Relevance to site audiences – the burning of coal and other fossil fuels has long fueled society. These resources were essential to the Civil War effort and were often fought over commodities. When compared with the amount of greenhouse gases released in the atmosphere for one day of battle to the amount released by a coal-fired power plant in one present day, the numbers are startling and begin to illustrate the rapid rate of increase in the causes of climate change. Universal concepts: surprise, dismay, concern, consequences, learning, future, hope
  - Possible strategies and techniques – Statistics and questions for social media discussion – create a Facebook post entitled "Civil War Energy Sources" – show statistics and briefly describe the ways in which the Civil War was a battle for control of critical energy resources; end with a question to prompt discussion about where in the world today there are battles over critical resources. Leave it open-ended so that discussion can go in any direction (may not go to climate change per se, but raises related questions).

- Rocky Mountain National Park
  - Significance to site resources – climate change is resulting in the loss of pine forests due to pine bark beetles and resulting fire dangers
  - Relevance to site audiences – At Rocky Mountain National Park in Colorado, more than 90% of the pine trees in the park have died in recent years. This is a dramatic change to the natural landscape at the park that is apparent to every visitor. Scientists have found this die-off is due to native pine beetles thriving under a warmer climate. This change is making a strong impression on the people who live in Colorado and recreate in Rocky on weekends. This is also resonating with visitors who have a special connection to Rocky, like those visiting the park with their parents decades after a memorable family vacation, and witnessing the dramatic change on the landscape evident before them or obvious in old photographs. Universal concepts: death, loss, family, science, challenge, hope
  - Possible strategies and techniques – Before-and-after photos for reflection and expression/sharing and seeing the perspectives of others – create a temporary exhibit for the visitor center illustrating the before-and-after views of the forest, with a brief bit of information about the beetle kill – and the question, "What will we tell our grandchildren?" Provide an invitation for visitors to leave a response in an adjacent notebook or on a large post-it note wall next to the exhibit.

Empowering Visitors with Opportunities for Action and Hope

An important insight that has come from social science research on climate change communication is that we must make our messages hopeful and provide meaningful suggestions for our visitors to take action in a park setting, in their backyard and in society at large. Messages that focus on dire results or dark predictions for the future leave audience members feeling anxious and unmotivated to join in the solutions. Therefore, always consider techniques and strategies that help provide opportunities for audience members to feel appreciation, empowerment and hope.

Provide encouragement – Just like connections to the meanings of the resource happen within the visitor, the decision to act also needs to come from within. Empowering visitors to take action should include a deep understanding of the audience and respect for multiple viewpoints, recognizing that not all actions will be appropriate for every individual. Audience members may be interested in doing something, but they may not know what to do. Knowing how the audience is already engaged in climate change issues will help the interpreter determine the next step in empowering the audience.

One of the most effective tools for encouraging action on the part of our visitors is to highlight actions that the park/site is taking itself. These can be management decisions, new facilities, or changes in services that provide an example of proactive response, and may suggest actions that visitors can take for themselves during or after their visits. This technique serves multiple purposes. Firstly, it reveals a commitment on the part of the agency/organization that we are willing to walk the talk. Additionally, it helps to demonstrate that these actions are possible and can actually make day-to-day operations easier or cheaper. Finally, it provides visitors with an opportunity for first-hand experiences with potentially new technologies and creates a foundation for dialog about additional actions we can all take.

Points to consider:

- Assess the needs of the audience. Is the audience at a place where they are open to learning about actions beyond the interpretive encounter?
- Are audience members already taking action to reduce their carbon footprint and/or involved with climate change activities and issues?
- What are the barriers for visitors to take action? Consider location, values, economic situations.
- What are the drivers for audience members to take actions?

Be hopeful – Craft interpretive opportunities that present a forward-thinking, proactive outlook and tone. Be honest about the seriousness of the issue but avoid characterizations of "doom and gloom" because research has shown that this approach is generally not effective. Promote the awareness that individual actions can make a huge difference, and provide examples and suggestions whenever appropriate. Encourage the idea that our national parks and other preserved public sites are set aside for the enjoyment of current and future generations; they are places to experience beauty, wonder, and humility and to learn from the past in order to make the future a better place—they are inherently places of hope. Focusing on these qualities of our sites can shift the tenor of the conversation away from the gloomy aspects of the issue and towards a future that we want to help realize.

It is also critically important for each of us to seek out those elements of hope within ourselves. Without nurturing that glimmer of hope within yourself, any message you try to present will sound insincere or disingenuous. Look to the resources you are interpreting and explore your passion and interest in them, and use that to craft your messages of hope with your audience.

Consider the potential power of the combined forces of interpretive sites around the country and the globe. For example, as one of the largest informal education organizations in the world, the NPS is well-positioned to share site-based stories about climate change, especially those that are hopeful and provide meaningful ways to act. Climate scientists have often struggled to communicate to a general audience, and in some cases have confused the public more. As interpreters, we can utilize our strengths to keep this issue focused on positive ideas and moving forward in productive ways for a better future.

Our sites provide tangible examples of climate change happening now on the landscape. Our sites are living laboratories where citizens can engage in participatory science learning. Many of our visitors have a natural affinity for the landscapes and resources that provide a common ground to begin the conversation. And, importantly, our cadre of interpreters and education specialists are regarded as trained, trusted sources of information with whom the public may be more open to engage on this topic.

In the National Park Service, we can know that our leadership has our back and has made responding to climate change a top priority. We are developing the tools and skills we need to successfully engage all audiences with this topic. When considering the urgency to which our resources can benefit from early action, and our natural ability as an education institution, we can embrace the imperative for immediate action. We have the opportunity and responsibility to help shift the national conversation about climate change into one that is meaningful, full of hope, and focused on a better future. Our time to engage on this topic is now.

References and Resources

In addition to the resources already linked throughout this document, other useful tools are listed below.

- **Best Practices for Interpreting Climate Change** (PDF), NPS Interpretive Development Program
- NPS TEL satellite broadcast training session notes on ***Interpreting Controversial Issues*** by Kim Sikoryak. 2005
- ***Be Relevant or Become a Relic: Meeting the Public Where They Are*** by David Larsen, from the George Wright Society Proceedings, April 19, 2001
- ***Changing the Conversation about Climate Change: A Theoretical Framework for Place-Based Climate Change Engagement*** by Sarah Schweizer, Shawn Davis, and Jessica Leigh Thompson
- ***"Fear Won't Do It": Promoting Positive Engagement With Climate Change Through Visual and Iconic Representations*** by Saffron O'Neill and Sophie Nicholson-Cole
- The Listening Project: **http://www.listeningproject.info/index.php**
- Climate Access storytelling resources: **http://www.climateaccess.org/storytelling-resources**
- Great Smoky Mountains **Citizen Science Guide** (PDF)
- ***Facilitating Reflection – A Manual for Leaders and Educators***
- Interpretive Facilitator's Toolkit webpage: **http://idp.eppley.org/Interp-Toolkit**
- 21st Century Engagement community of practice: **https://sites.google.com/site/nps21ce/**
- ***Why Frames Matter***, Nisbet (2009) Environment: Science and Policy for Sustainable Development

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http://idp.eppley.org/training/specialist/interpreting-climate-change

Appendix I: Interpretive Venues for Climate Change Interpretation

In developing a broad strategy for interpreting climate change, interpreters should always consider what is most appropriate for the audience and the venue, and for their own personal style. Traditional techniques and advanced engagement strategies can be incorporated into a wide range of interpretive venues that are wholly, partly or tangentially related to climate change, as appropriate. The following list provides some suggestions.

Informal contacts

The one-on-one nature of informal contacts makes them an ideal venue for inviting expression and allowing the visitors to own and direct the conversation. This type of contact allows knowledge of the audience to be gathered during the conversation and the interpretation tailored to that audience. The discussion may be initiated by or can be easily tied to park resources that are directly observable. As with all informal contacts, the interpreter needs to actively listen and to be sensitive to the needs and desires of the audience. Developing methods of getting past the sound bites to the observable impacts and park positions may be particularly important in this venue. Because this audience is particularly ephemeral, interpreters should develop techniques to either "leave it hanging" to allow the visitors to further reflect, or to facilitate an audience-appropriate interpretive conclusion.

Key skills

- Practice/model active listening and respect
- Invite/encourage sharing/expression
- Allow audience members to own the conversation and guide its direction
- Develop techniques to frame the dialogue in ways that provide relevance and a stronger connection to the park's resources and how climate change is impacting them
- Use appropriate questioning techniques to encourage critical thinking
- If appropriate, provide suggestions for further information or options to take action

Traditional ranger programs

Traditional ranger programs include ranger talks, conducted activities such as guided walks and tours, demonstrations, and illustrated presentations. In these venues, when the audience is small, plan for a more conversational and co-created experience in addressing climate change. If the audience is large, participation and interaction are more challenging, but still possible. Creative use of engagement strategies for large audiences might include imagination exercises, pair sharing, short answers to games or quizzes, or intentional moments for silent reflection on provocative questions. If gathering information on the audience during the program is difficult due to group size, interact with the audience as much as possible prior to the program.

Use caution when considering an entire program on climate science – consider the interests of your audience and why they came to your site. For mixed "general" audiences, avoid attempting to teach in-depth climate science or preach sustainability. In many cases, the best strategy may be to incorporate climate change content into existing programming, focused on observed and potential impacts on park resources, or relevant links to park stories, for audience connection. Care should be given not to make the inclusion of climate interpretation seem contrived. Framing can also be used to fit climate change interpretation into the context of existing programs. The interpreter may also include enhanced opportunities for audience expression and provide multiple perspectives to address a wider audience.

Facilitated interpretive discussions

When developing new programming centered on climate change, interpreters should focus on providing opportunities for facilitated interpretive discussions with audiences. Because of strong personal opinions and emotions that visitors may have related to climate change, encouraging sharing and participation in the discussion is an important and effective way to connect with audiences. In this venue, the interpreter becomes a discussion leader/facilitator, providing a safe environment for the audience to connect, reflect, express, and participate. It is important for the interpreter/facilitator to model active listening and show respect for differing viewpoints, use questioning techniques to encour-

age critical thinking and dialogue, and develop techniques to provide an environment in which audience members can own and direct the conversation. Best practices for this type of venue also include providing opportunities for not only audience expression but also participation in activities that may include role playing, artistic expression, and resource-related activities such as climate change monitoring or mitigation.

Education programs

This venue has specific educational goals and objectives developed in collaboration with schools and other education partners and is typically tailored to a specific age or affinity group. As with other venues, climate change interpretation should be directly tied to park resources. Creating group interaction through facilitated discussion, using good questioning techniques, listening actively, and allowing time for reflection are particularly important. Programs in this venue will often revolve around a set of participatory activities such as role playing, games, citizen science, or artistic expression with time for reflection and expression during or between them.

Written and visual media–exhibits, brochures, articles, web pages

Interpretive media venues provide an opportunity to reach a larger and wider audience than personal programming but offer more challenges for involving audience expression or participation. As with other interpretive venues, the climate change discussion should center around the significance and relevance to park resources. Climate change messages can be woven into existing media or new media developed with a climate change focus. Critical thinking can be encouraged through questioning techniques and presenting multiple perspectives. Written materials can suggest options for participation and action, and sharing and expression can be promoted by providing places for posting art, photos, comments, etc. (e.g., bulletin boards or websites).

Social media–Facebook, blogs, Twitter, Flickr, etc.

Social media provide an excellent opportunity for a much wider audience and greater involvement than the typical park visit or traditional media. This form of interpretation has great potential because of possible exponential growth of audiences and its interactive nature. Interpretation through social media may include initiating audience discussion relevant to park resources and climate change through blogs or Facebook and then letting audience members guide its direction. There is also the ability to share or conduct contests for photos, writing, or art related to climate change through these media.

Citizen science–phenology, weather, biogeography, flip studies and etc.

Citizen science activities can be used as a venue for deeper interpretation of climate change and its impacts on park resources. These activities may be offered as a stand-alone program or be participatory opportunities offered in other programs/venues. Citizen science activities are participatory by nature but will be more meaningful and memorable if they incorporate interpretive elements that help the audience discover and unwrap the significance and relevance of the science and the importance of each person's contribution. Consider including opportunities for discussion and sharing, or other co-creation techniques, depending on audience type, time, and location. For guidance in developing a project, see the Citizen Science Toolkit developed by the Cornell Lab of Ornithology at http://www.birds.cornell.edu/citscitoolkit/toolkit

Appendix II: Climate Change Action Examples from Parks

Keeping actions site specific and place based allows visitors to feel empowered about their lifestyle, question their behaviors, and/or decide if they are willing to make a lifestyle change at all. Visitors may be more inclined to act if they can understand how a park's actions have made a difference on a local, regional, national, and/or international level. Consider examples that could be translated by the visitor to be realistic in their own lives in addition to providing examples on a larger scale (e.g., purchasing a hybrid vehicle, taking public transportation, etc.). Also, consider providing visitors with a venue to share the actions that they are taking in their own lives. Visitor examples may also inspire other audience members to take action.

Examples of Reducing Carbon Footprint:

- At Kenai Fjords National Park **renewable energy credits** are purchased to offset carbon emissions at the park. These funds support renewable energy efforts throughout the state of Alaska. The park and its partners provide opportunities for visitors to purchase carbon offset stickers to mitigate their carbon footprint.
- Apostle Islands National Lakeshore is **replacing all regular light bulbs** with energy-efficient and light-controlling devices as one strategy to reduce greenhouse gas emissions by 12.5 percent over 2006 levels. Replacing one regular light bulb with a compact fluorescent light bulb prevents 150 pounds of carbon dioxide a year from entering the atmosphere.
- Joshua Tree National Park went from using diesel generators to **generating power from solar panels** and saved $60,000 annually in operating costs.
- The World War II Valor in the Pacific National Monument visitor center was designed so that the trade winds could be used to cool the building. Thermostats are turned down to save energy: **adjusting a thermostat down** just 2 degrees in winter and up 2 degrees in summer could save about 2,000 pounds of carbon dioxide a year.
- Point Reyes National Seashore is **reducing waste through recycling** efforts and educating visitors and staff to reuse. On a household level, 2,400 pounds of carbon dioxide per year can be saved by recycling just half of household waste.
- Whitman Mission National Historic Site is **using less hot water** by installing waterless urinals and low-flow showerheads (saving 350 pounds of carbon dioxide per year), because they realized that heating water takes a tremendous amount of energy.
- Zion National Park instituted a mandatory shuttle system within the park that reduced the number of vehicles from travelling in the canyon by thousands. **Walking, biking, and/or carpooling** can save one pound of carbon dioxide for every mile that isn't driven.

Examples of How to Get Involved:

- In addition to reducing carbon emissions, actions beyond the interpretive contact can include becoming more involved with understanding and participating in climate change–related activities and issues. It is important to provide specific park examples that generate ideas that can be applied to visitors' daily lives and interests. Examples include:
- Glacier National Park has used citizen science to gather data on bird, invasive plant species, and animal distribution throughout the park.
- Several parks (California units, NE network parks, Acadia, Great Smoky Mountains) are engaging in phenology monitoring where visitors help collect data on important life cycle events called phenophases. They can continue this effort back at home and enter their data onto the National Phenology Network website (www.usanpn.org).