



American Wild: A Memorial

Doyle, Holzman, Lipschitz, & Steiner

2016

National Park Service.
CENTENNIAL

VIEW. VISIT. VOTE.

#100moreyears



www.future.ncpc.gov

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*Cover Image:
Arches National Park, Lindsey Beal*

Summary



The National Parks are a living memorial to a uniquely American idea of wilderness. In celebration of the National Parks Centennial, American Wild captures the majesty of the nation's landscape and brings it to the Nation's capital. Located in the L'Enfant Plaza Station, American Wild generates civic pride by connecting the distinctive architecture of the Washington, D.C. Metro to the National Parks. Using ultra-high-definition video, recordings of each of the 59 National Parks are projection-mapped at full scale onto the coffered ceiling of L'Enfant Plaza Station, a central Metro station used by a majority of the ridership. The memorial lasts for 59 days – one day for each park. This timeline of the National Park Service's 100-year history serves as a visual advocate for Service's next 100 years. In so doing, American Wild serves not only as a steward of the National Park's legacy but also a steward of its future.

Wilderness created a singular American identity, distinguishing the nation from the Old World, providing a cache of resources to ensure its economic ascendancy, and defining a hallmark American individualism. The National Park System is a living memorial to this uniquely American wilderness narrative, and is imbued with the mission “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” (National Park Service). As both a material and cultural construct, each of the 59 National Parks seeks to preserve the physical and ideological spaces of wilderness and ensure ongoing accessibility. As the Service celebrates its centennial, the effects of climate change and social inequality threaten the Service’s mission, impairing ecosystems and undermining the equity of access. Indeed, the country’s National Parks increasingly face extreme heat, precipitation, and drought; these factors negatively impact plant and animal species and diminish user experiences. While the National Park System hosted a record-breaking 307.2 million people in 2015, high attendance alone is not an indicator of accessibility. Affluent Americans are three times more likely to visit National Parks than low income Americans; park visitors are disproportionately white and non-Hispanic. As ecosystems degrade and income gaps widen, how can we memorialize and democratize the National Parks and the very idea of wilderness?

American Wild, as a temporal memorial, is a prototype for virtualizing the National Parks through an interactive and immersive installation. In the words

of George M. Wright, the first biologist to conduct a faunal survey for the National Park Service, “A park is an artificial unit, not an independent biological unit with natural boundaries.” American Wild embraces and enhances this artificiality in order to re-imagine human-nature interactions.

The primary medium for the American Wild memorial is projection and the memorial is sited in the Washington, D.C. Metro. The Metrorail and Metrobus serve approximately 4 million residents, allowing the installation to bring a unique experience to a diverse population. The project is also in keeping with the Metro’s Art in Transit program, which strives to foster a sense of belonging among its thousands of users each day. The juxtaposition of National Parks and the iconic architecture of the Metro creates a new dynamic space within the capital and transforms a place of passage into one of pause. The vaulted ceilings of Metro stations provide an ideal architectural backdrop and spatial juxtaposition to the vastness of the National Parks landscape. L’Enfant Plaza Station was selected because it is closely located to the memorial core, it is high in ridership and connects the East/West Blue Line to the North/South Green Line, thus drawing from a cross-section of the Washington, D.C. population. Using ultra-high-definition video, recordings of each 59 National Parks are projection-mapped at full scale onto the station’s vaulted ceiling. The memorial lasts for 59 days – one day for each park. This timeline of the National Park Service’s 100-year history advocates for their next 100 years. Audio recordings heighten the visceral experience, engendering a curiosity about the American landscape. The memorial will exist in both physical and virtual

realms, with the installation supplemented by web- and smart phone-accessible interfaces. The sights and sounds of the American Wild create a new sense of place within the L’Enfant Plaza Station and can provide a range of experiences. At its most simple the memorial inspires a sense of awe, a new memory, or break from routine. At its most ambitious the memorial is a call to action simultaneously memorializing the past and current National Parks while petitioning for their future preservation. The goal is to tie together the experience of the memorial (View), the reality of visiting the parks (Visit) and the possibility of action and advocacy (Vote). An example of this latter experience is that a memorial viewer is inspired to visit a National Park and to learn about the specific challenges that particular park faces. This memorial experience offers the viewer a new appreciation for and awareness of the American landscape. A possible outcome of visiting a National Park is a newfound commitment to ensuring the parks’ existence for the next 100 years, an effort accompanied by the #100moreyears social media campaign. A vital aspect of this future is the public’s commitment to policy that supports the National Parks. The ‘vote’ aspect of this utilizes QR (quick response) codes and phone applications to connect memorial viewers to existing legislation and provides additional information for ways to support the future of the parks. Examples include a bill that is about to be presented to the Senate or a draft letter a local congressman describing issues facing a specific park. View, Visit, Vote reflects the memorial of the future as something greater than the initial experience. A memorial for the future is no longer a steward of the past but rather is a steward of the future.

Project Team

The American Wild: A Memorial project team includes Shelby Doyle, Justine Holzman, Forbes Lipschitz, and Halina Steiner. The team's experience spans research, teaching, exhibit design, and professional practice working on a wide range of projects that at their root seek to challenge and reveal ecological and man-made systems, redefine public space, and engage individuals and groups. The project team has existing working relationships with virtual reality and immersive environment design consultants with specialized skills who can assist the project team as-needed as the project develops.

Shelby Doyle AIA LEED AP is an architect and Assistant Professor of Architecture and Daniel J. Huberty Faculty Fellow at Iowa State University College of Design. Her research and teaching examine riparian urbanism and design outreach through digital fabrication, design/build and interdisciplinary design methods. Doyle previously held a joint appointment at Louisiana State University as a Visiting Assistant Professor of Architecture and a Research Fellow in the LSU Coastal Sustainability Studio (CSS), an interdisciplinary think tank. At the CSS Doyle was a project lead on the upcoming Shifting Foundation Exhibition. This work began as a Fulbright Grant titled *City of Water: Architecture, Infrastructure and the Floods of Phnom Penh* and was an extension of professional work with CookFox Architects designing the Friends Center at the Angkor Hospital for Children in Siem Reap. Doyle holds a Master of Architecture degree from the Harvard Graduate School of Design and a Bachelor of Science in Architecture from the University of Virginia.

Justine Holzman is an Adjunct Assistant Professor in the School of Landscape Architecture at the University of Tennessee, a research affiliate for the Responsive Environments and Artifacts Lab at Harvard, and the 2016 Maeder-York Family Fellow in Landscape Studies at the Isabella Stewart Gardner Museum. She holds an MLA from LSU and a BA in Landscape Architecture from UC Berkeley. Holzman previously taught at LSU as a Visiting Assistant Professor where she worked as a Research Fellow with the LSU Coastal Sustainability Studio. Her research recognizes the inherent responsive capabilities of landscape materiality and speculates on the development of synthetic ecologies dependent on responsive technologies for nuanced monitoring and material reconfiguration. She recently co-authored *Responsive Landscapes: Strategies for Responsive Technologies in Landscape Architecture* with Bradley Cantrell, framing a comprehensive view of interactive and responsive projects and their relationship to environmental space.

Forbes Lipschitz is an Assistant Professor of Landscape Architecture at the Austin E. Knowlton School of Architecture at The Ohio State University. She teaches both studio and seminar courses in landscape planning, geographic information systems, and representation. As a faculty affiliate with the Initiative for Food and Agricultural Transformation, her current research explores the role of geospatial analysis and representation in rethinking North American agricultural territories. She has been awarded teaching and research grants from the LSU Office of Research and Development, the Coastal Sustainability Studio, and the Graham Foundation for Advanced Studies in Fine Arts. Her professional

experience in landscape architecture has spanned a range of public, private, and infrastructural work, including a multi-year installation at Les Jardins de Metis. She received her Master in Landscape Architecture from the Harvard Graduate School of Design and a BA in environmental aesthetics from Pomona College in Claremont, California.

Halina Steiner is an Assistant Professor of Landscape Architecture at the Austin E. Knowlton School of Architecture at The Ohio State University. Her current research focuses on the visualization of transboundary hydrologic and infrastructure systems. Prior to her appointment at OSU, Steiner served as the Design Director for DLANDstudio Architecture + Landscape Architecture where she was the project manager for master planning, green infrastructure, temporary installations, and public design projects. This work included Paths to Pier 42, a three year pop-up park to activate underused waterfront space impacted by Superstorm Sandy, Public Media Commons, The QueensWay Plan, and HOLD System. She received a Master in Landscape Architecture from the City College of New York and a Bachelor of Science in Design in Visual Communication Design from Arizona State University.

Introduction



American Wild

The National Parks are a living memorial to a uniquely American idea of wilderness. American Wild captures the majesty of the nation's landscape and brings it to its capital.

Big Bend National Park Frederick Steiner

Introduction

The National Parks are a living memorial to a uniquely American idea of wilderness. American Wild captures the majesty of the nation's landscape. This can be interpreted as an act of memorializing the American wilderness and preserving the memory of the American landscape.

In keeping with the Memorials for the Future prompt this proposal challenges the notion of memorial, as a static and permanent construction, as the parks are alive and ever changing.



"You can't capture this on an iPad or a flat screen or even an oil painting. You've got to come here and breathe it in yourself..."

... It's a park that captures the wonder of the world, that changes you by being here. There's something sacred about this place. And I suppose that's why the walls of this valley were referred to as cathedral walls — because here at Yosemite, we connect not just with our own spirit, but with something greater. ***It's almost like the spirit of America itself is right here...."***

Yosemite National Park National Geographic Instagram

President Obama on the National Parks

In celebration of the National Parks Centennial, President Obama expressed his thoughts on the experience of visiting our National Parks. He spoke of their importance as part of the American spirit.



“...Make no mistake, climate change is no longer just a threat, it’s already a reality.

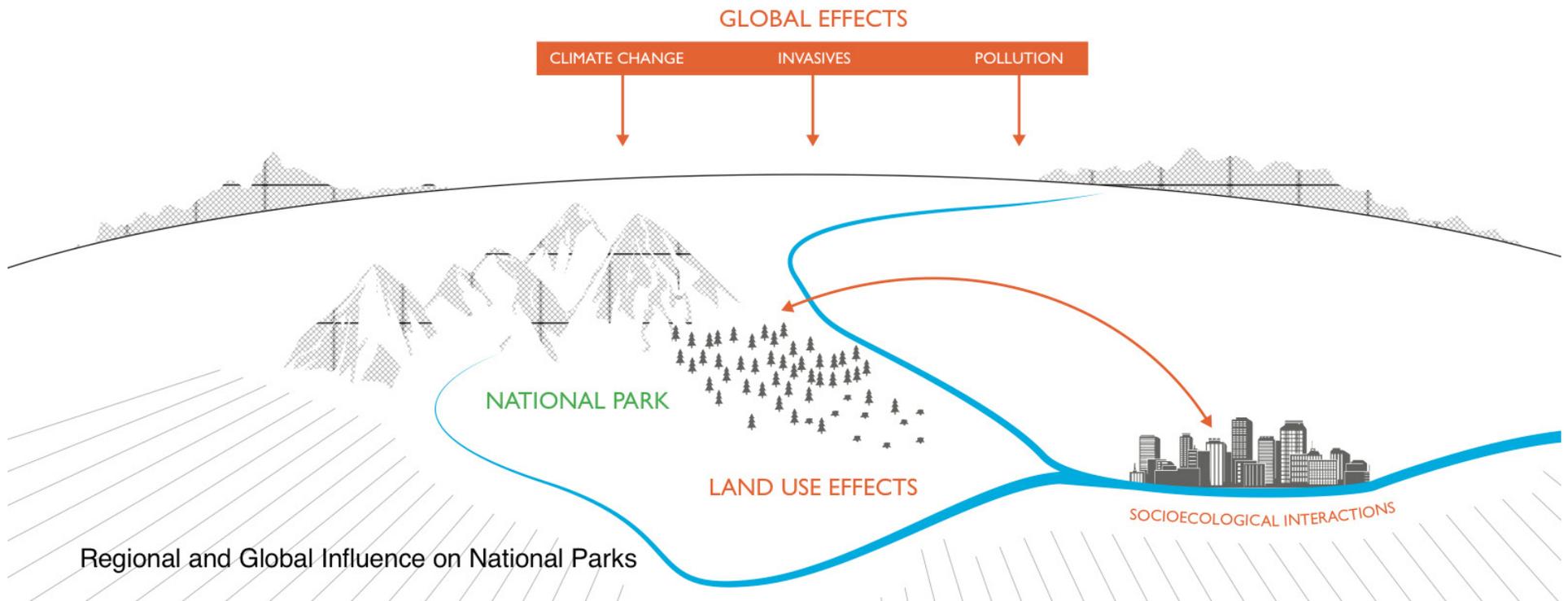
As we look ahead, in the coming years and decades, rising temperatures could mean no more glaciers at Glacier National Park. No more Joshua Trees at Joshua Tree National Park. Rising seas could destroy vital ecosystems in the Everglades, and at some point could even threaten icons like the Statue of Liberty and Ellis Island.”

**President Obama
Sentinel Bridge
Yosemite National Park**

Yosemite National Park National Geographic Instagram

President Obama on the National Parks

Obama also expressed his concern for the future of the National Parks in the face of climate change and what legacy will remain for future generations.



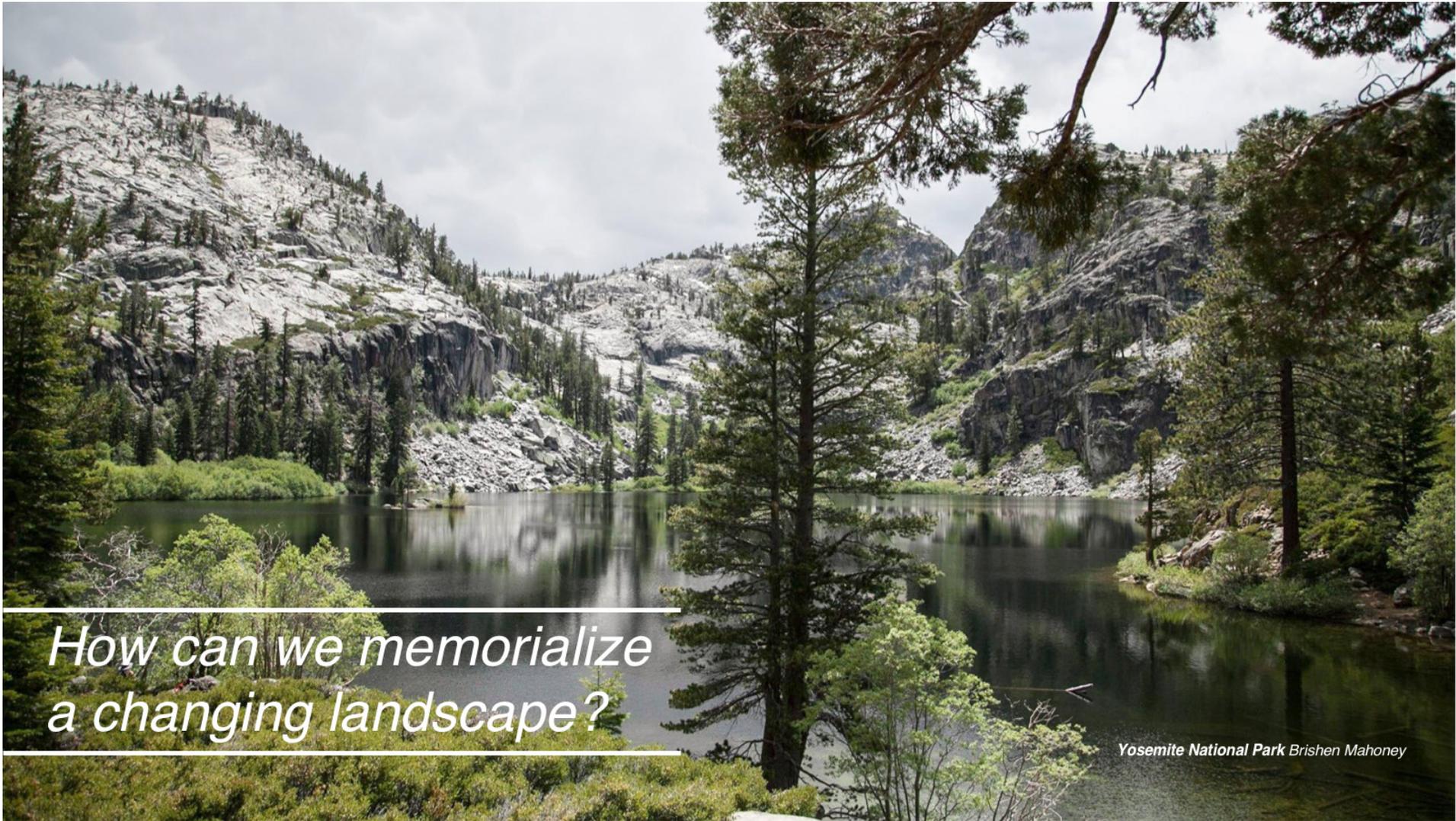
Regional and Global Influence on National Parks

Regional and Global Influence on National Parks

Climate change is altering ecosystems in unprecedented ways that threaten conservation of the American wilderness. This unique moment in history requires an innovative approach to preserving and memorializing the existing parks while simultaneously advocating for their future. Landscape drawings and paintings were the first commemorations of our national wilderness. Later in

our history, postcards and stamps further promoted a sense of national pride and popularized the importance of wilderness preservation and conservation.

National Parks Overview



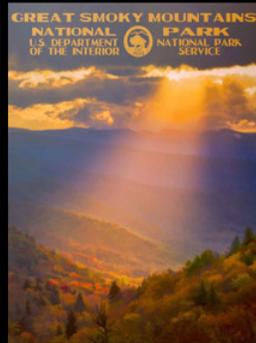
*How can we memorialize
a changing landscape?*

Yosemite National Park Brishen Mahoney



Painting 1855

Smoky Mountains Pre-National Park
William Charles Anthony Frerichs



Ephemera 1934-1943

Great Smoky Mountains National Park
WPA era Postcards and Stamp



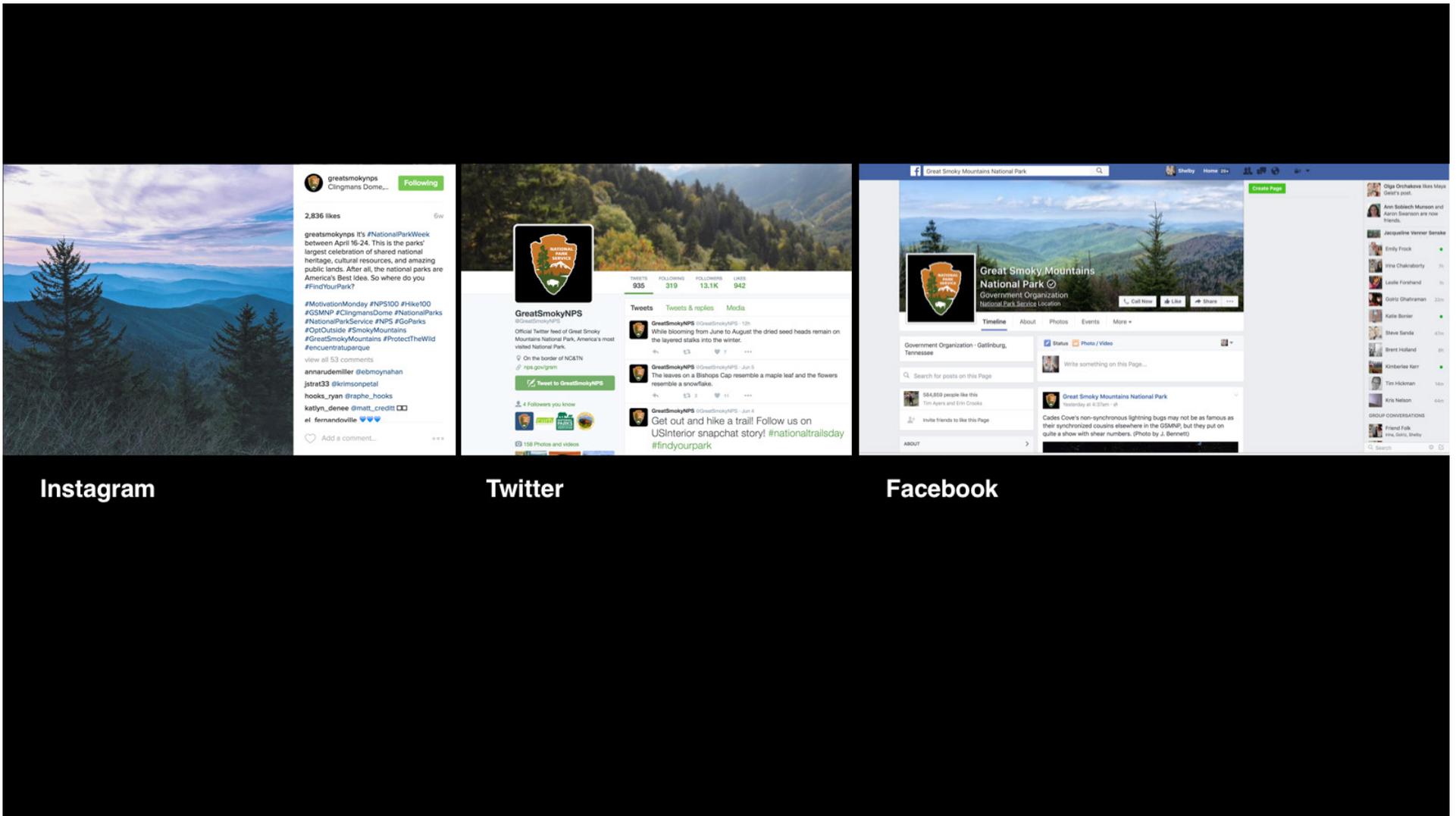
Photography 1941

Great Smoky Mountains National Park
Ansel Adams

Historic Representation of Smoky Mountains

Landscape drawings and paintings were the first commemorations of our national wilderness. Later in our history, postcards and stamps further promoted a sense of national pride and popularized the importance of wilderness preservation and conservation. The parks were also extensively photographed, cultivating a tradition of landscape

photography that disseminated the beauty and majesty of the parks to a wider population of an increasingly urban nation.



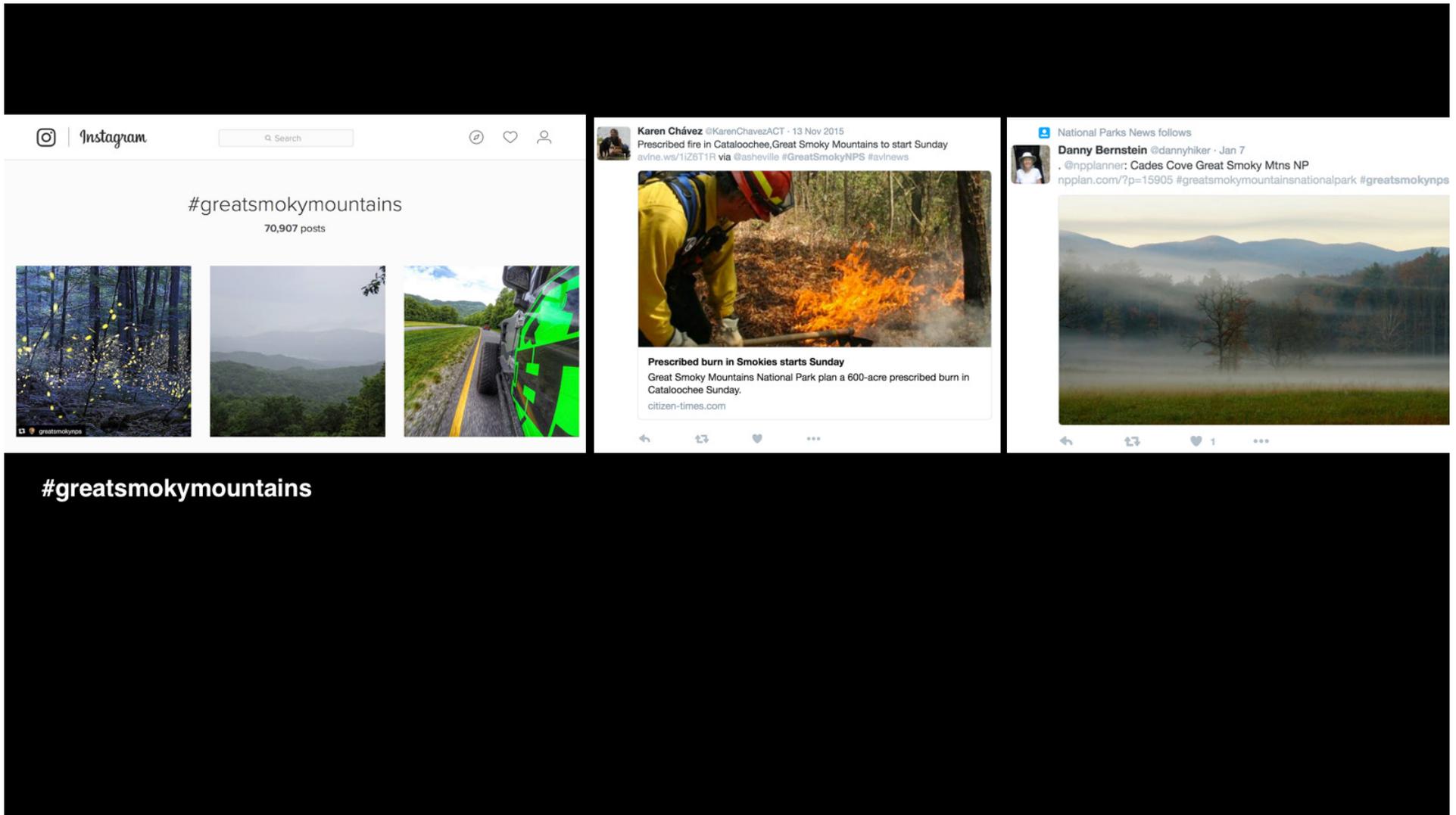
Instagram

Twitter

Facebook

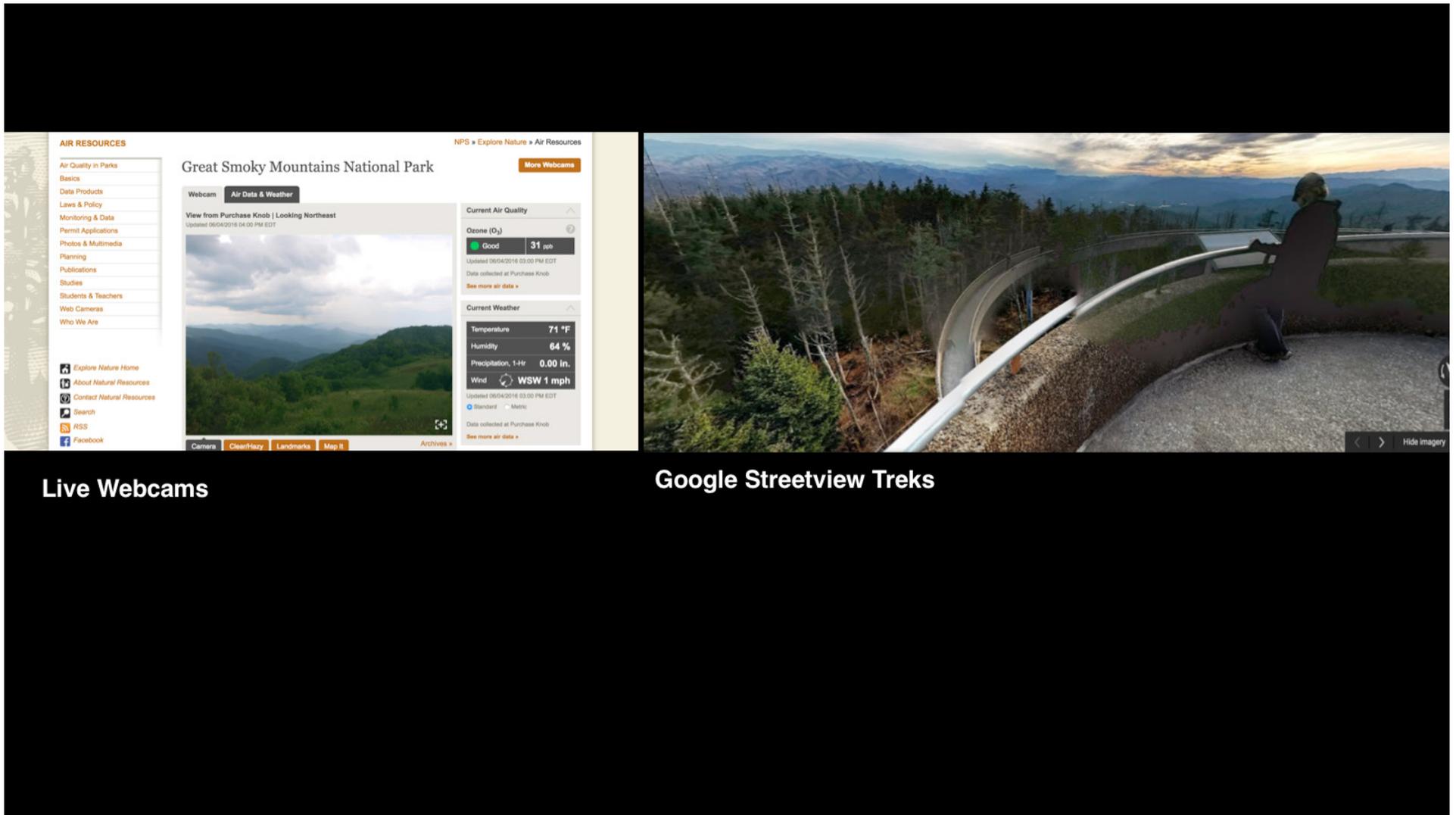
Self Representation Methods

Today, the parks are still regarded for their scenic beauty, heavily visited, and importantly, heavily documented and their images disseminated through social media networks. The National Park Service now has their own Instagram, Twitter, and Facebook pages where they can deliver current updates, facts, and happenings to their network.



Social Media Conversations

Additionally other social media users can use hash-tags to build a collective representation of their experiences.



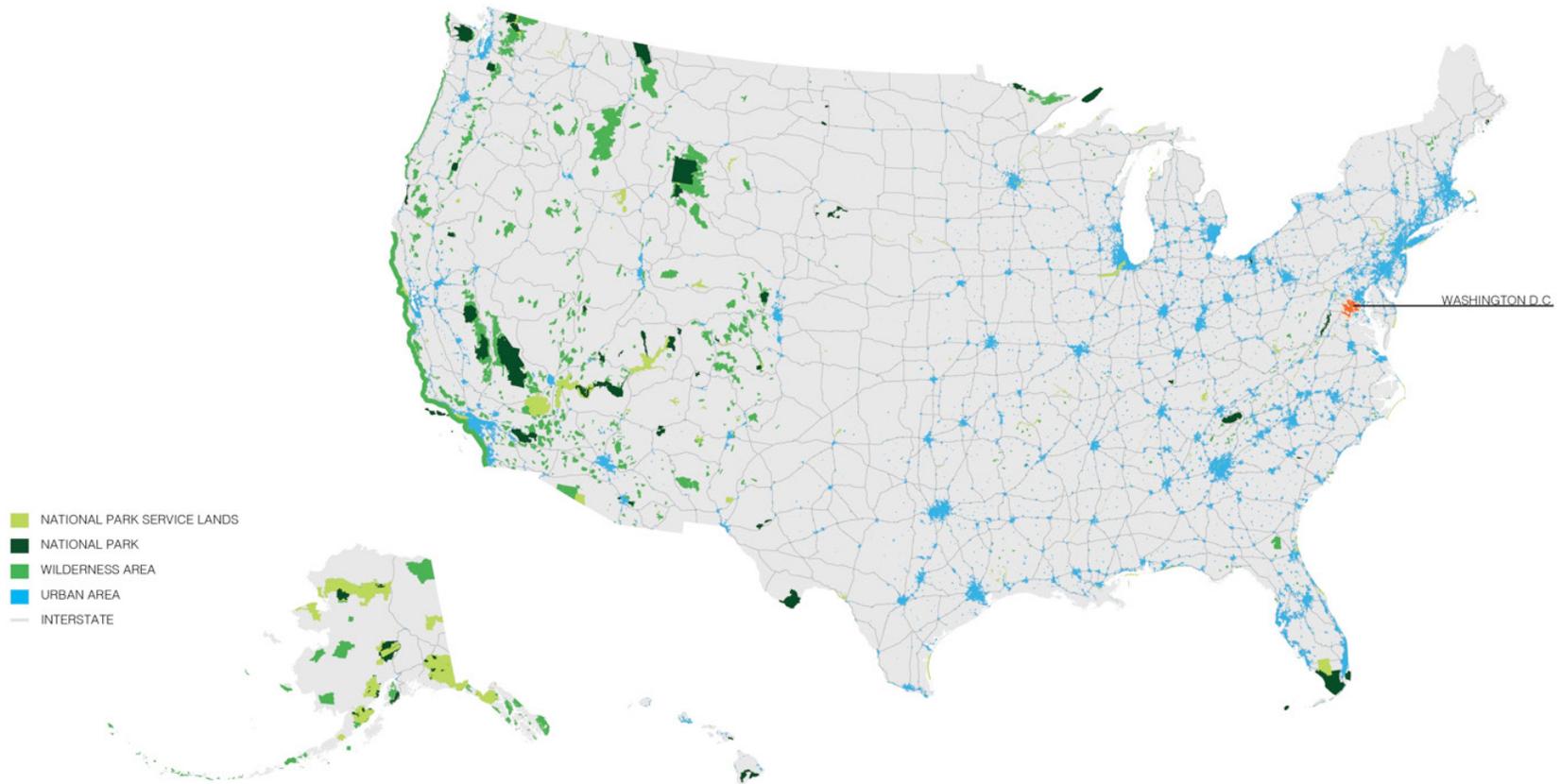
Live Webcams

Google Streetview Treks

Interactive Representation Methods

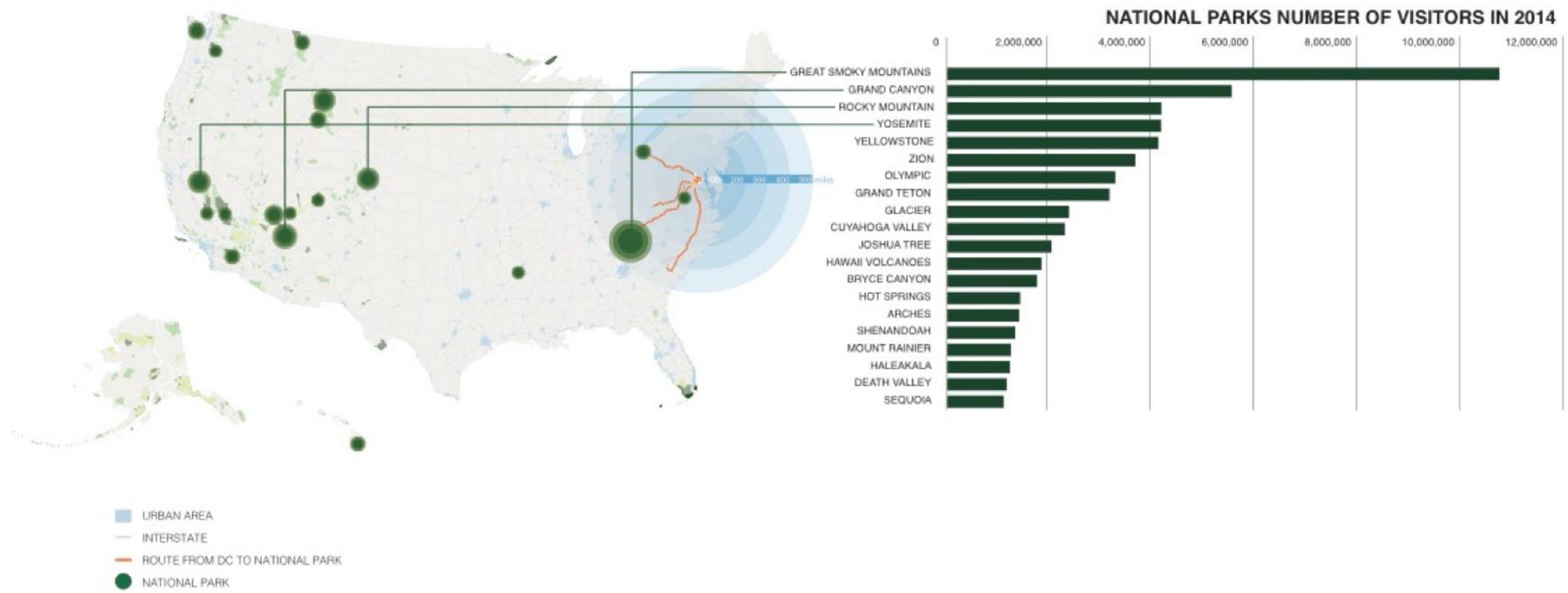
Live web-cams managed by the National Park Service integrate real-time video with environmental data like weather and air quality, which can impact visibility of scenic vistas. Google has also brought Street View Treks to two National Parks, allowing online visitors to go on 360 degree virtual hikes.

While some of these platforms are available in real time and integrated with environmental sensor data, and others offer 360 views, they are only available on personal devices which cannot communicate the scale of these landscapes or enable a truly shared experience.



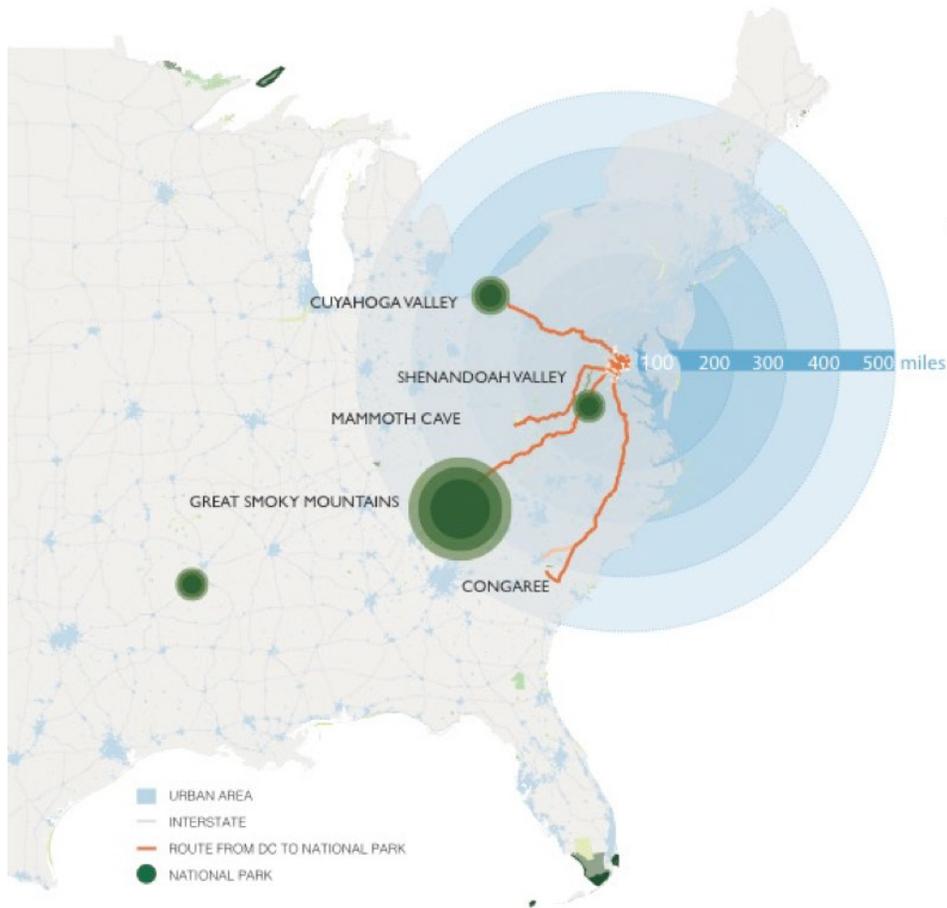
Distribution of National Parks, Wilderness Areas and Urban Areas

When we look more closely at the distribution of National Parks and Wilderness Areas in relation to urban areas, certain conditions are revealed. Park and Wilderness areas are predominantly located on the west coast (shown in green), while urban density is more predominate on the east coast (shown in blue).



Most Visited National Parks in 2014

With the exception of the Great Smoky Mountains, the most visited parks are in the western United States.



HOURS OF DRIVING TO NATIONAL PARKS FROM WASHINGTON DC



National Parks Access by Car from Washington DC

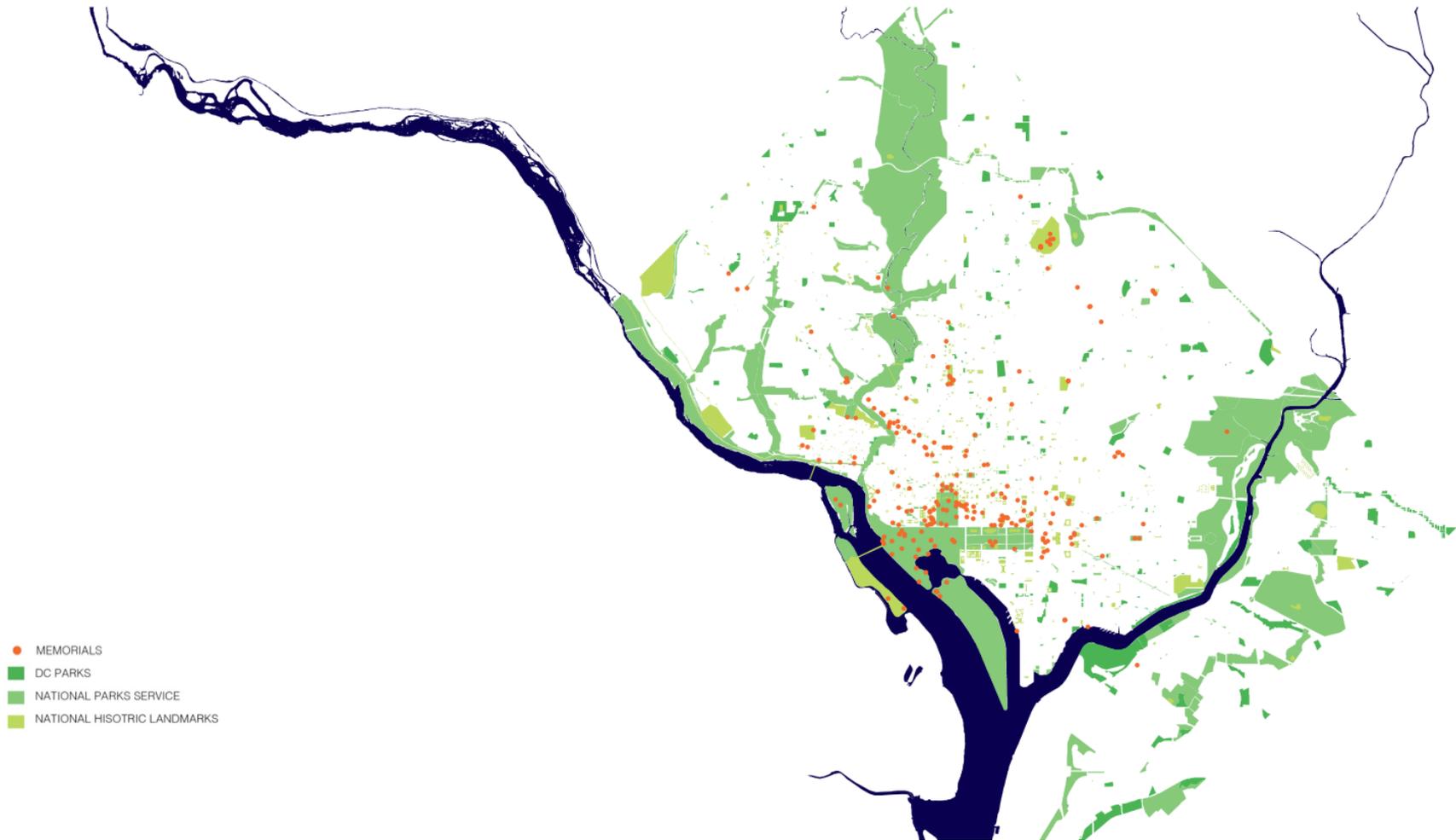
While the majority of National Parks are hard to reach from Washington, D.C., the Great Smoky Mountains, Cuyahoga, and Shenandoah Parks are within a day's driving distance. Washington, D.C.'s existing memorial landscape provides context and site for a future memorial to the National Parks.

Metro Overview



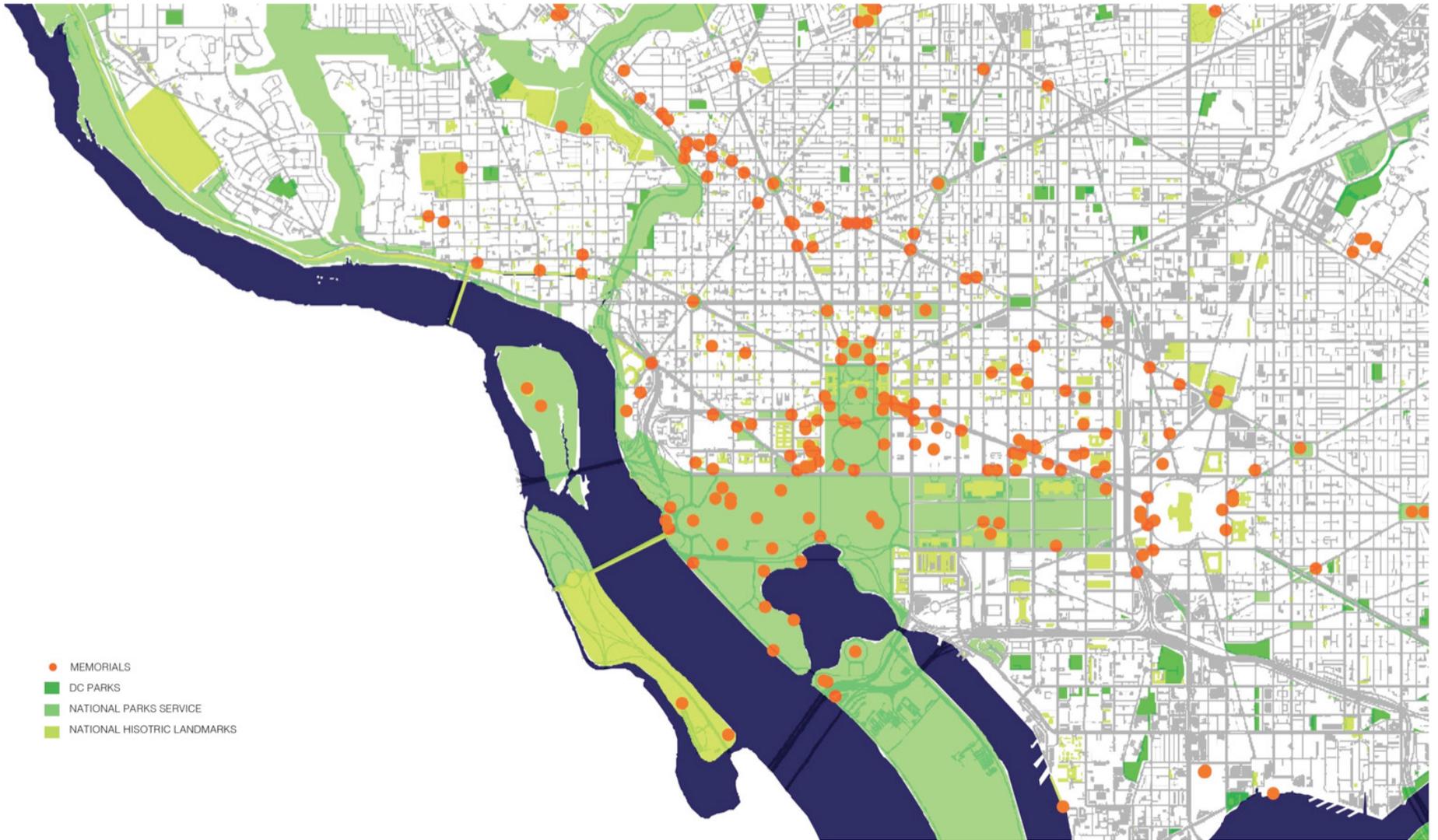
*How can we bring
the experience of the
National Parks to our
nation's capital?*

Death Valley National Park Lindsey Beal



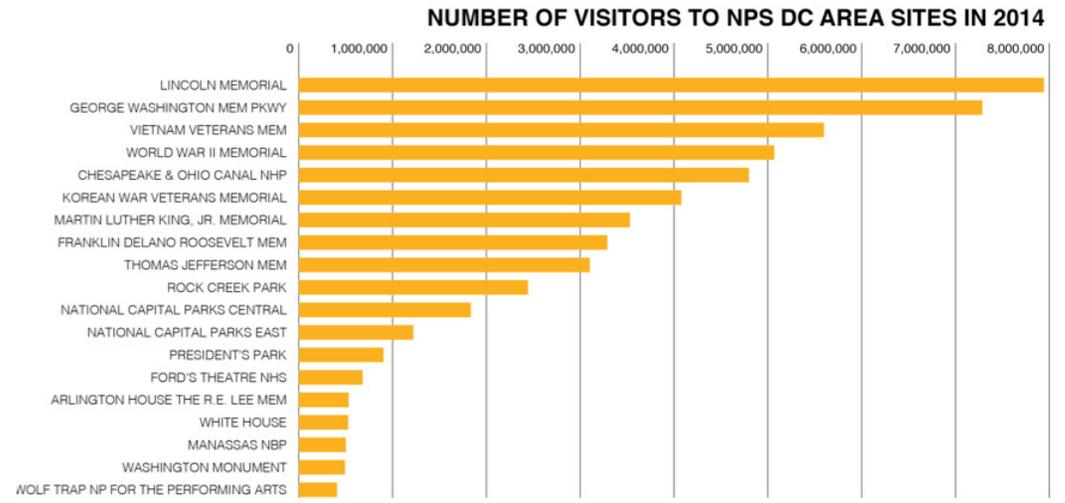
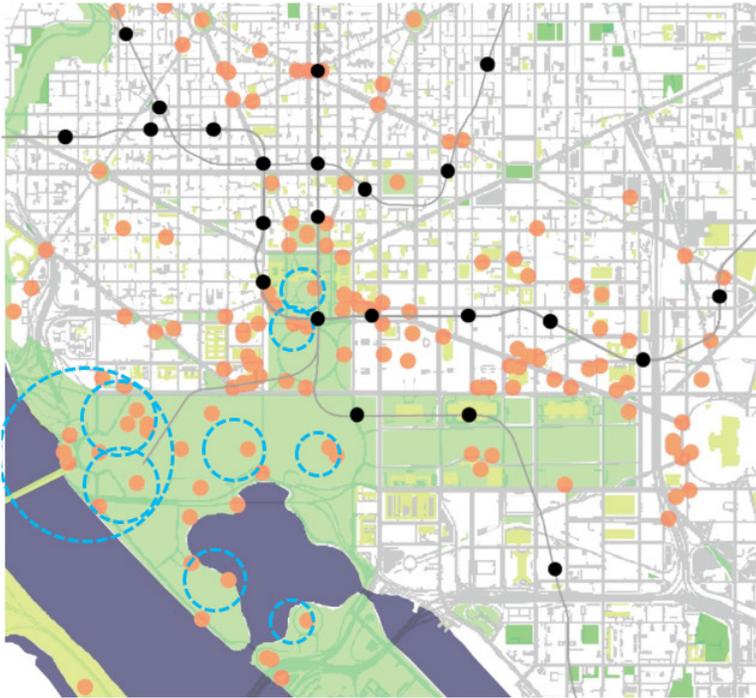
Washington, D.C. Memorial Landscape

First, we must look at the existing memorial landscape.



Washington, D.C. Memorial Landscape

This reveals memorial concentrations along Massachusetts Avenue and along and within the National Mall and West Potomac Park.

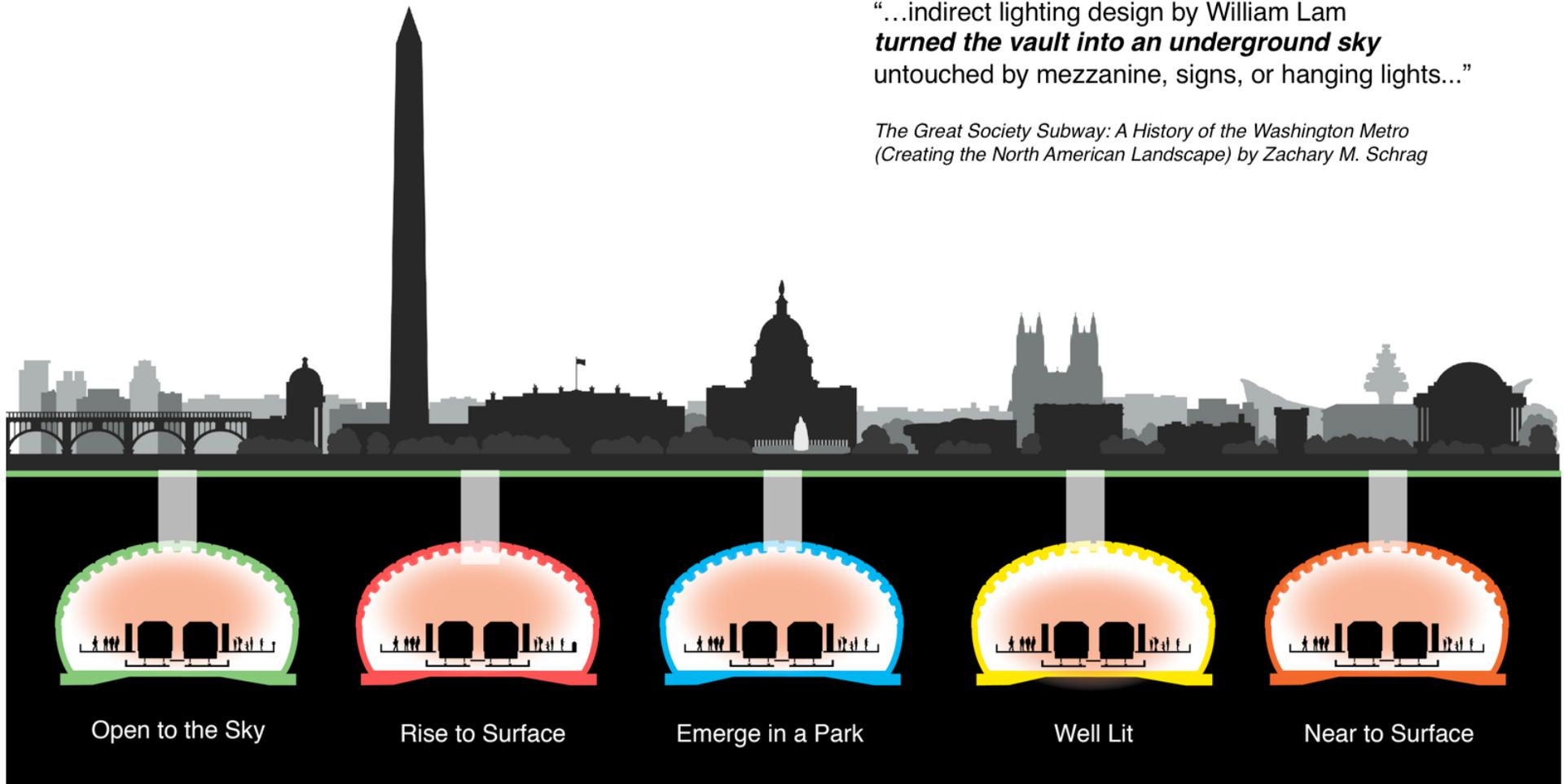


Most Visited Memorials

A majority of the most visited parks occur in the central core. Just as the highways connect National Parks, the Washington, D.C. Metro connects the capital's memorial landscape.

“...indirect lighting design by William Lam
turned the vault into an underground sky
untouched by mezzanine, signs, or hanging lights...”

*The Great Society Subway: A History of the Washington Metro
(Creating the North American Landscape) by Zachary M. Schrag*

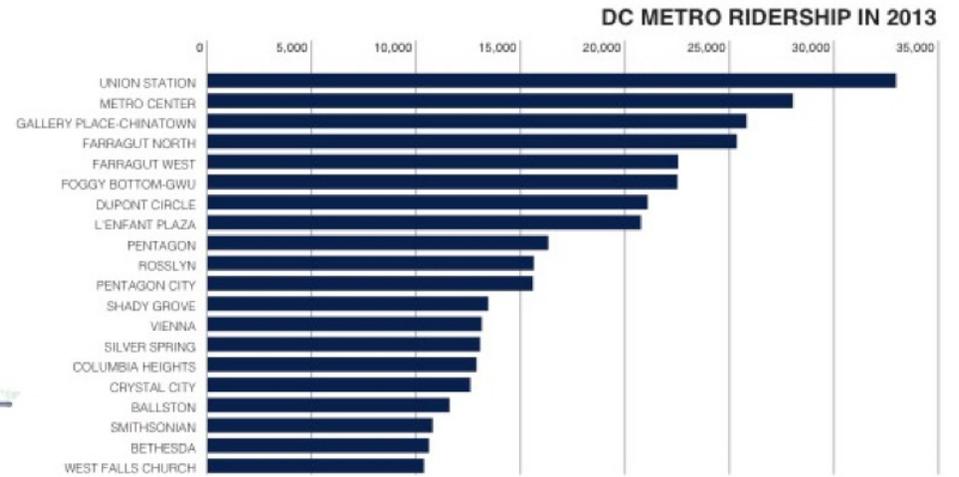


Washington, D.C. Metro Architecture

The distinctive architecture of the Metro was designed to be more than infrastructure. The Metro connects public spaces on the surface to the infrastructure below, generating a new form of civic pride.

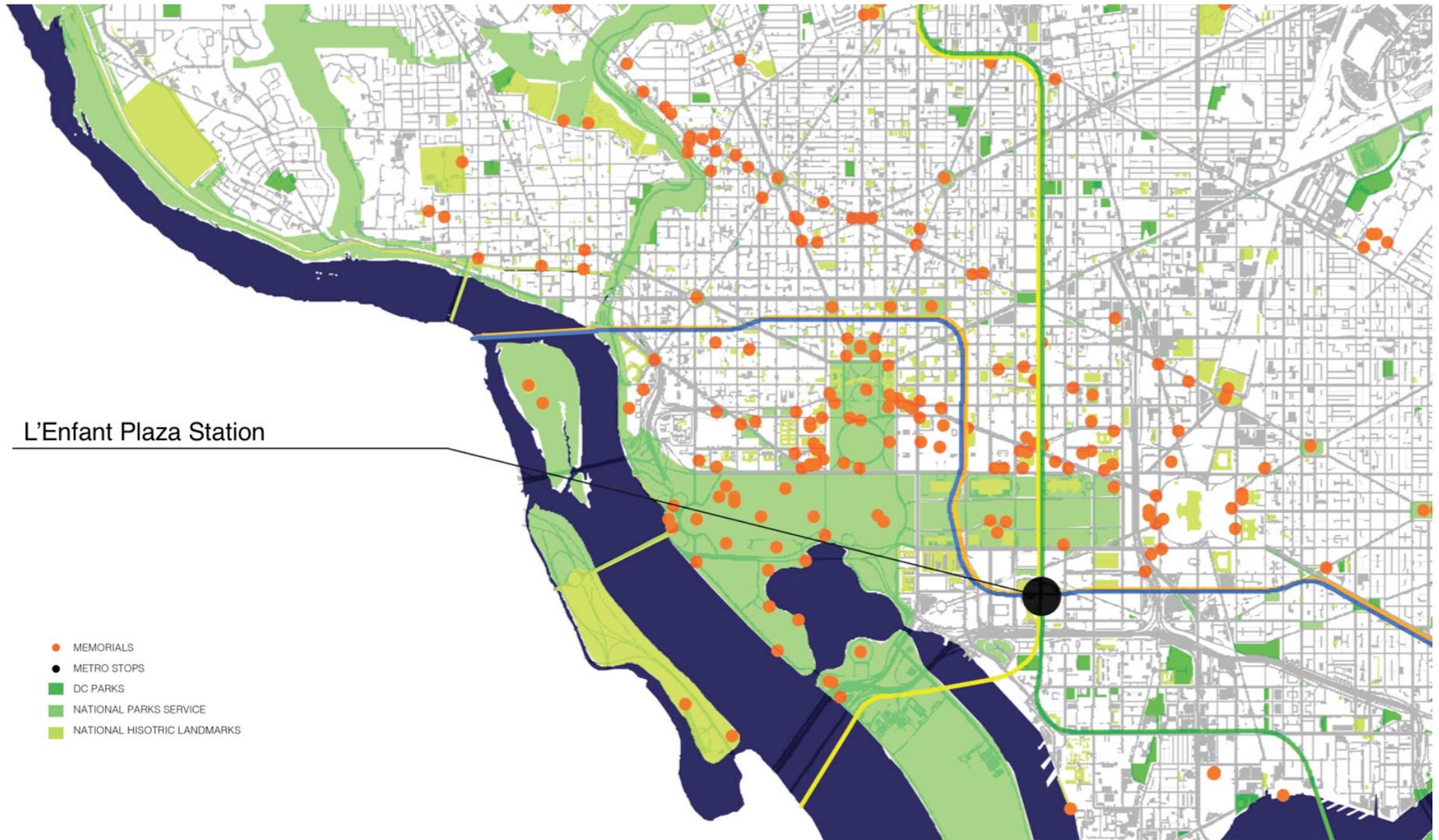


How can we select a station that reaches the broadest audience within the memorial core?



DC Metro Ridership by Station, 2013

When we look at the Metro ridership we see that the most-used stations sit near the memorial core.



L'Enfant Plaza Station

Station Selection

We have selected the L'Enfant Plaza Station as an ideal site. It is closely located to the memorial core, it is high in ridership, connects the E/W Blue Line and the N/S Green Line drawing from a cross section of the D.C. population. The covered passageway connecting the lines creates a unique opportunity for

the memorial where its location can be contemplative without interfering with the operations of the Metro.

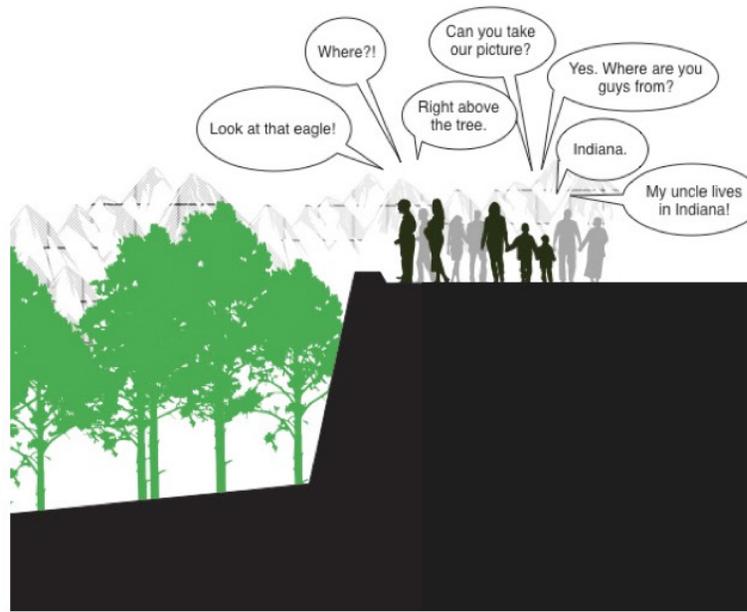
Monumental Core Overview

*How can L'Enfant Plaza Station
become a platform within the
existing memorial landscape?*

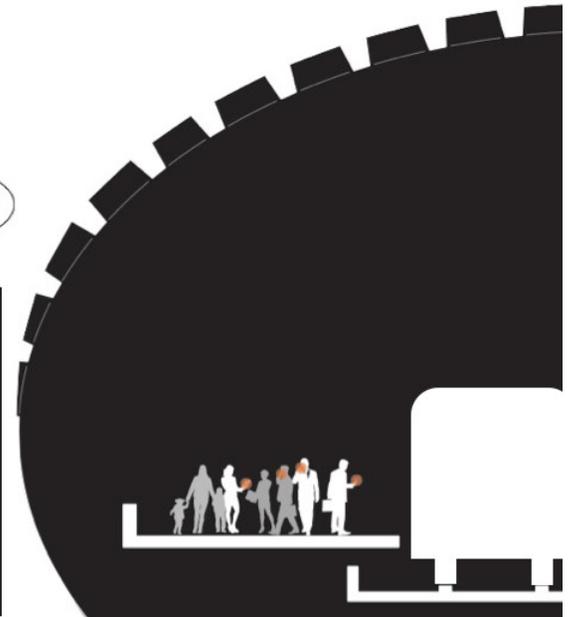




Washington, D.C. Memorial



National Park



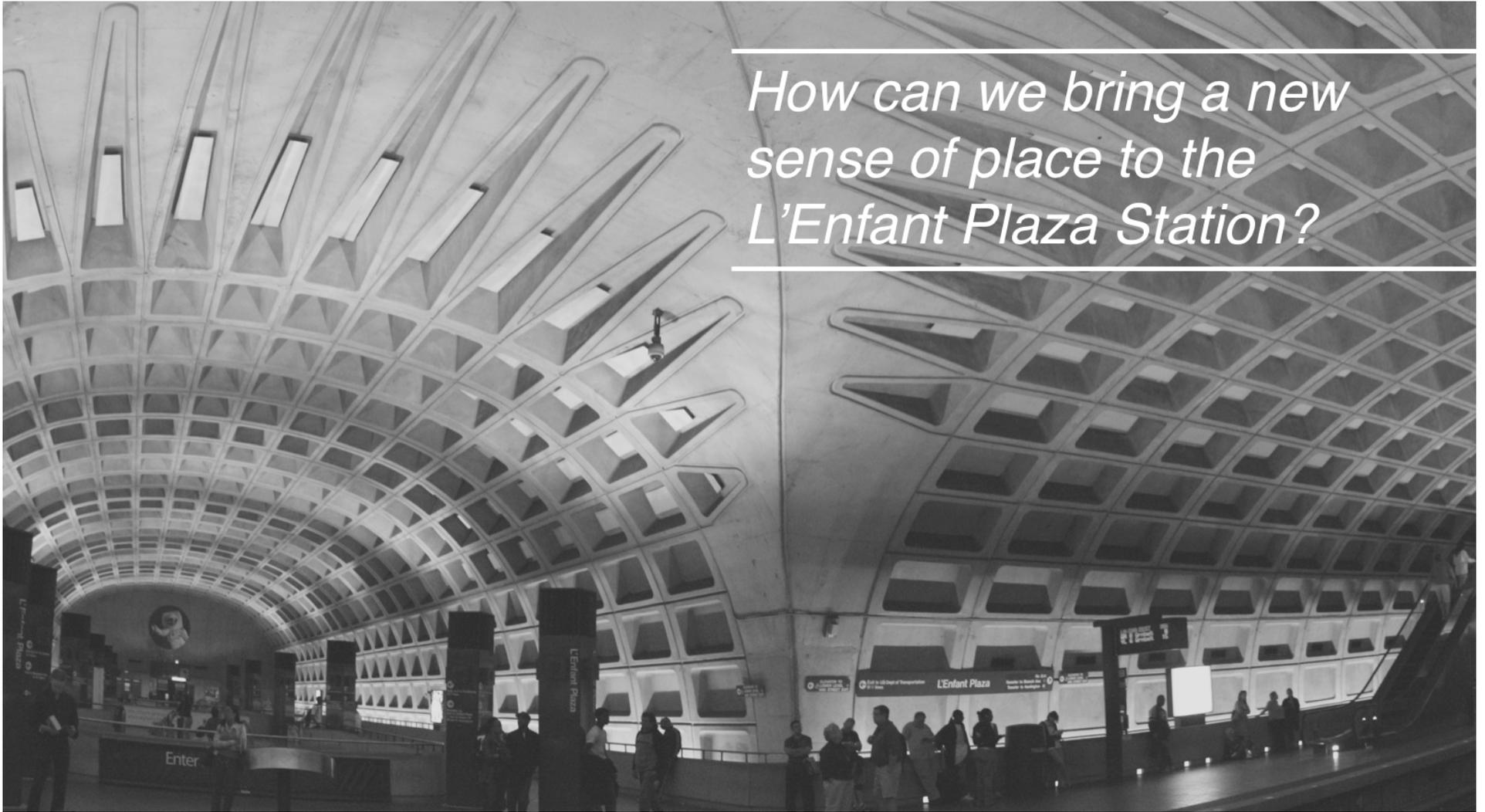
D.C. Metro

Varied Experiences

When we look at these memorial landscape experiences and compare them with the experiences of the Metro rider we see contrasting senses of place. The metro is experienced through circulation and movement and the memorial landscape through destinations.

L'Enfant Plaza Station

How can we bring a new sense of place to the L'Enfant Plaza Station?



VIEW

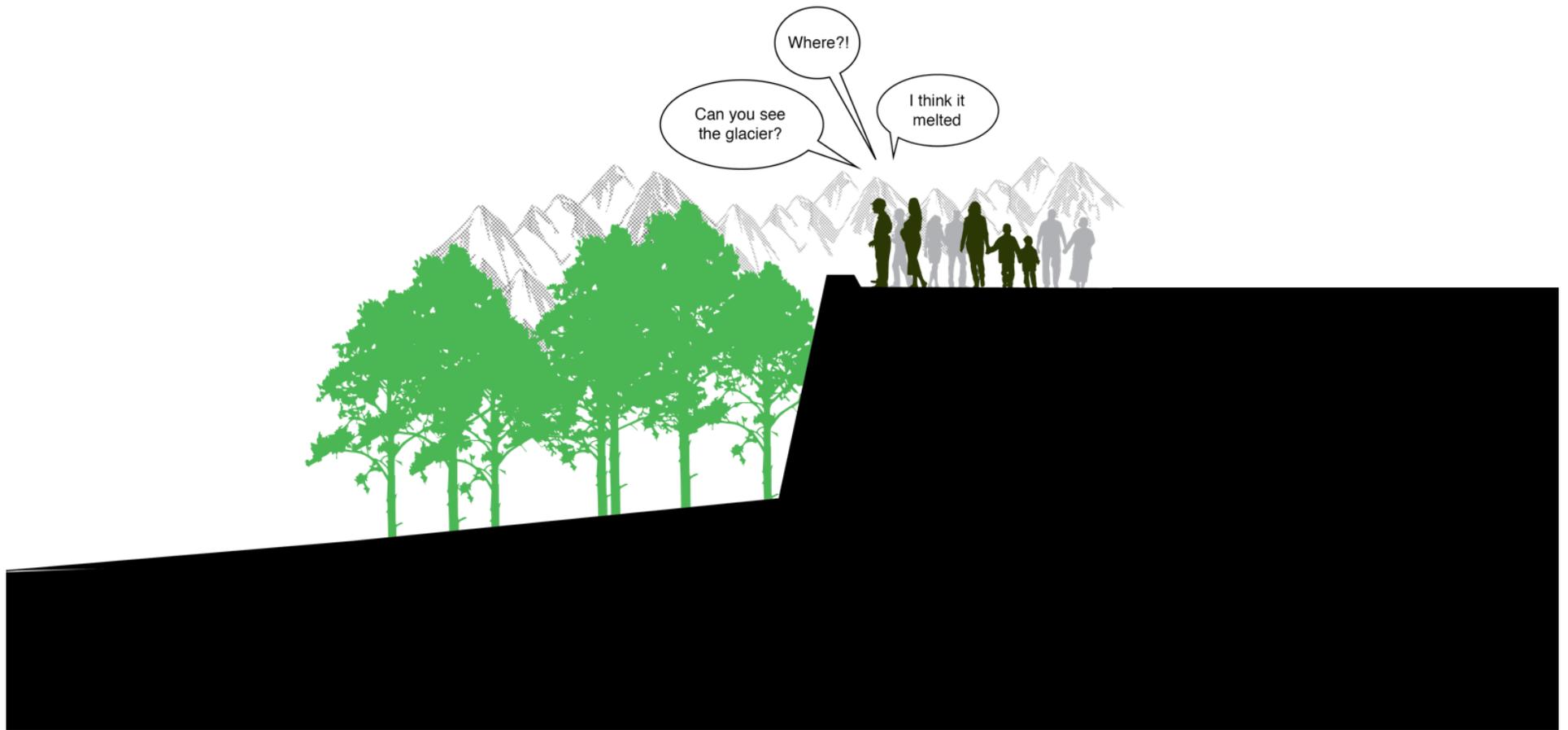


American Wild: A Memorial Experience

The juxtaposition of National Parks and the iconic architecture of Washington, D.C.'s Metro system creates a new and dynamic space within the capital and transforms a place of passage into one of pause. The sights and sounds of the American Wild create a new sense of place within the L'Enfant Plaza Station.

This memorial can provide a range of experiences. At its most simple it inspires a sense of awe, a new memory, or break from routine. At its most ambitious the memorial is a call to action simultaneously memorializing the past and current National Parks while petitioning for their future preservation.

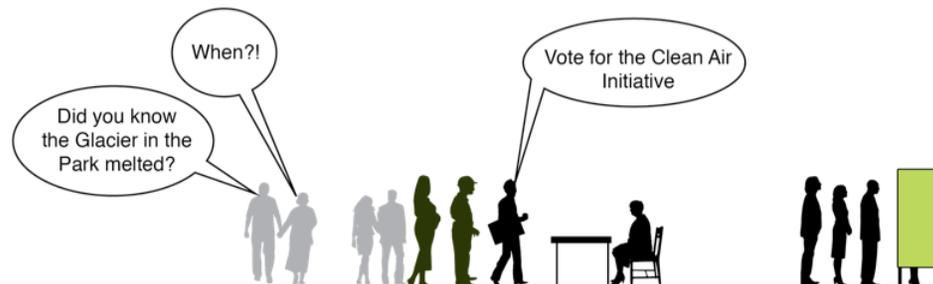
VISIT



Memorial Viewer and National Park Experience

An example of this call to action is the experience of a visitor who is inspired by this memorial to visit a National Park, and is then inspired to learn about the specific challenges that park faces. This unique experience can foster new appreciation for and awareness of the American landscape.

VOTE



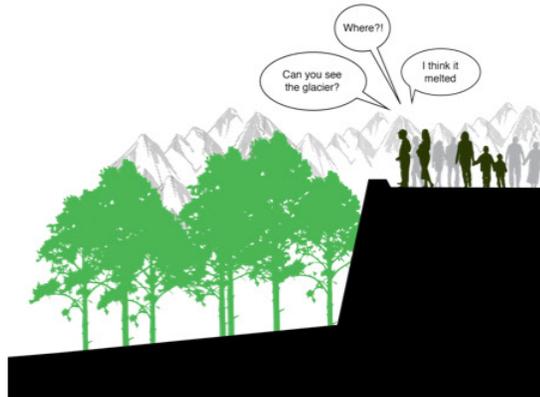
Call to Action and Policy Change

A possible outcome of visiting a National Park is a newfound commitment to ensuring the park's existence for the next 100 years. A vital aspect of this future is the public's commitment to policy that supports the National Parks. The 'vote' aspect of this utilizes QR codes and phone applications to connect memorial viewers to existing legislation and provides additional information for ways to support

the next 100 years of the parks. Examples might include information about a parks-related bill about to be presented to the Senate, or a letter to the visitor's local member of Congress describing the issues a specific park is facing.



VIEW



VISIT



VOTE

Future Memorial Experience

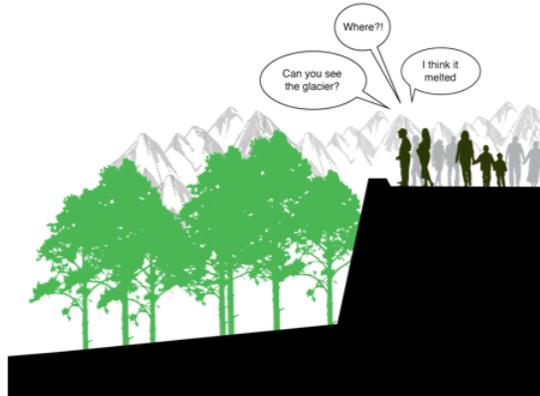
View, Visit, Vote conceives of the memorial of the future as something greater than the initial experience. The goal is to tie together the experience of the memorial (View), the reality of visiting the parks (Visit) and the possibility of action and advocacy (Vote).

A memorial for the future is no longer a steward of the past but rather is a steward of the future.

Memorial Details



VIEW



VISIT



VOTE

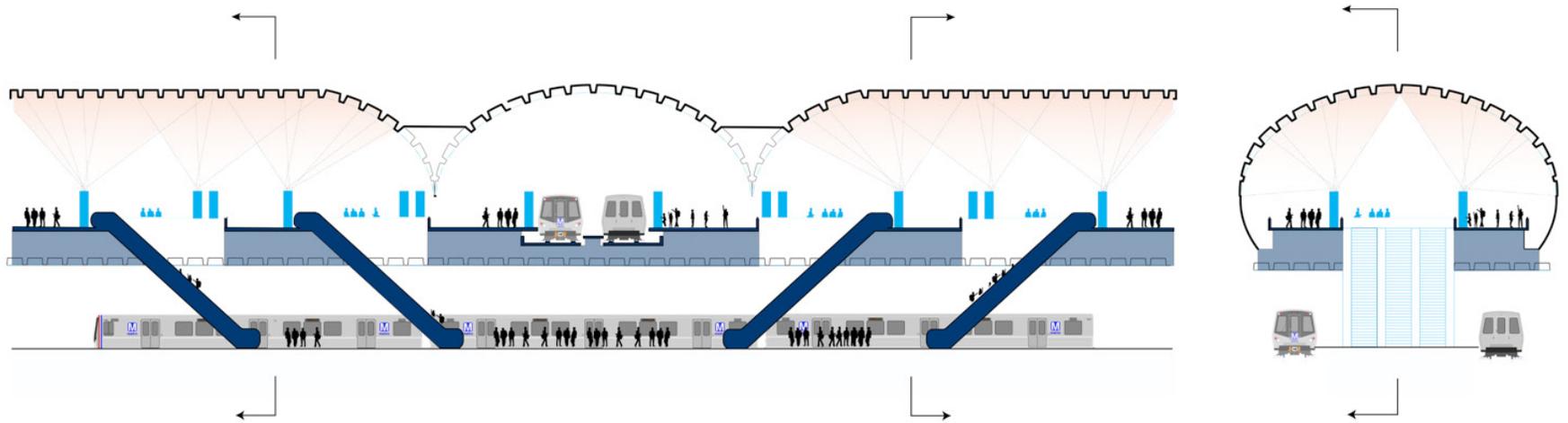
Future Memorial Experience



*How will we augment
the existing DC Metro?*

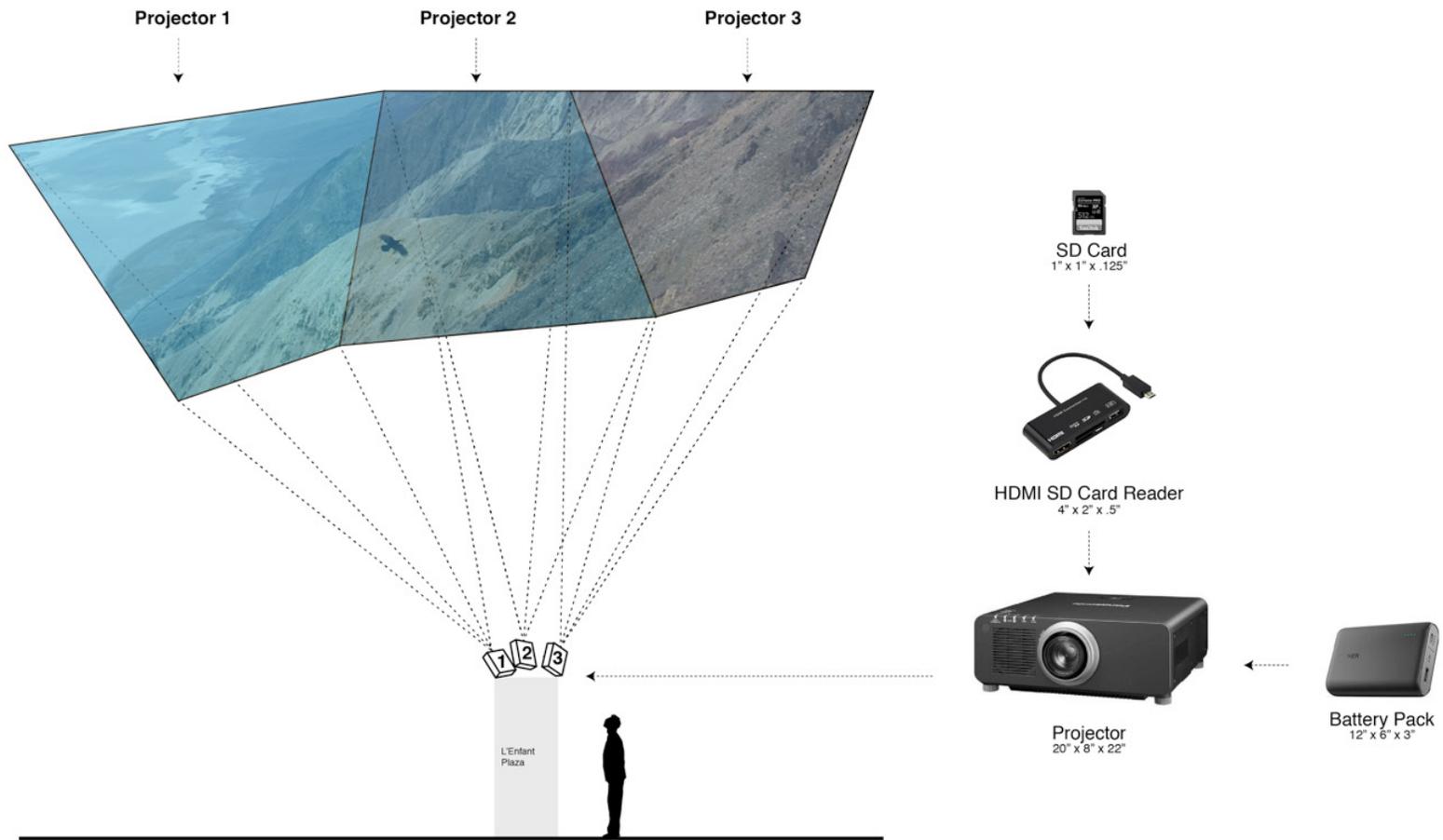
Diagram of L'Enfant Plaza Station

The primary medium for the American Wild memorial is projection. The memorial is identified in orange and utilizes the passageways between the Green and Blue lines within L'Enfant Plaza Station. The memorial is visible from both the upper and lower platforms, but fully experienced in the passageway as to optimize safety and not disrupt Metro operations.



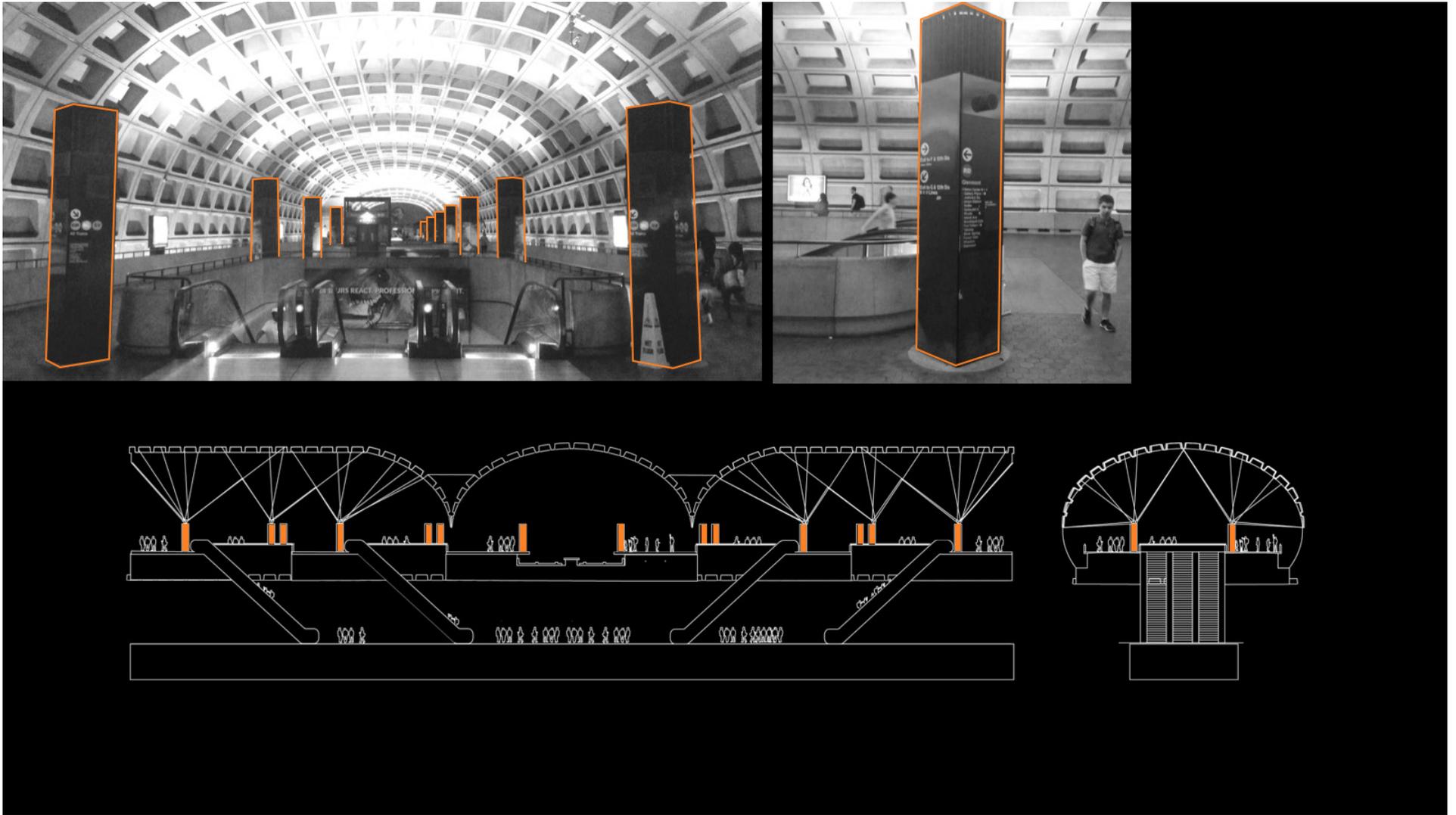
Projector Maps Image onto 3-D Surface

Projection mapping is a technology used to turn objects – such as the coffered ceiling of the Washington DC Metro, into a display surface for image projection. Specialized software can interact with a projector to fit any desired image onto a complex surface.



Multiple Projectors Map a Single Image

Additionally, multiple projectors can be mapped together to create a unified and immersive image. This diagram shows three projectors atop a way-finding pylon.

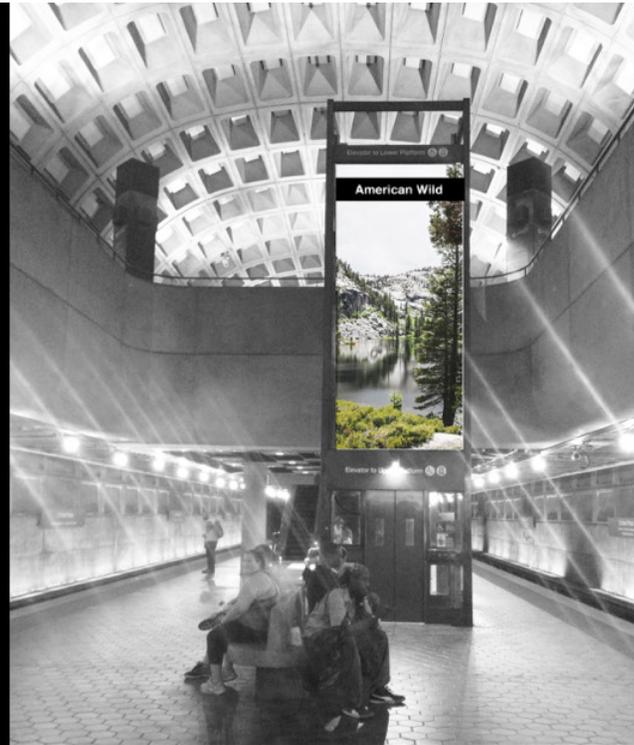


Projection and Sound Installation

The vertical way-finding pylons, identified in orange, serve as the infrastructure for both the projector and sound installation.



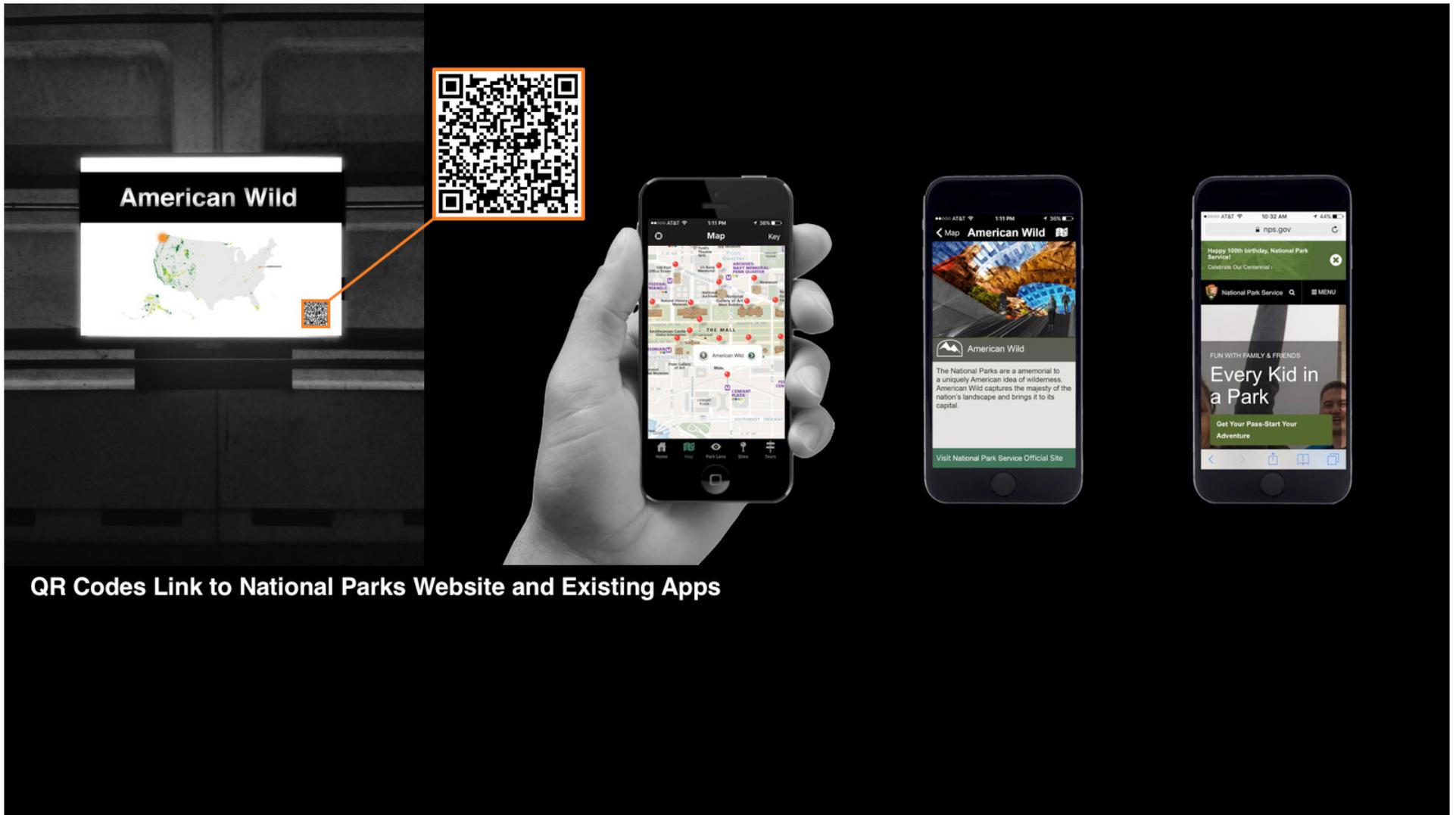
Existing Advertising Locations



Elevator Shaft

Graphic Installation

Existing advertising screens and glass elevator shafts will feature additional signage for **American Wild** and provide information about how to learn more about the parks, opportunities for advocacy, and upcoming legislation.

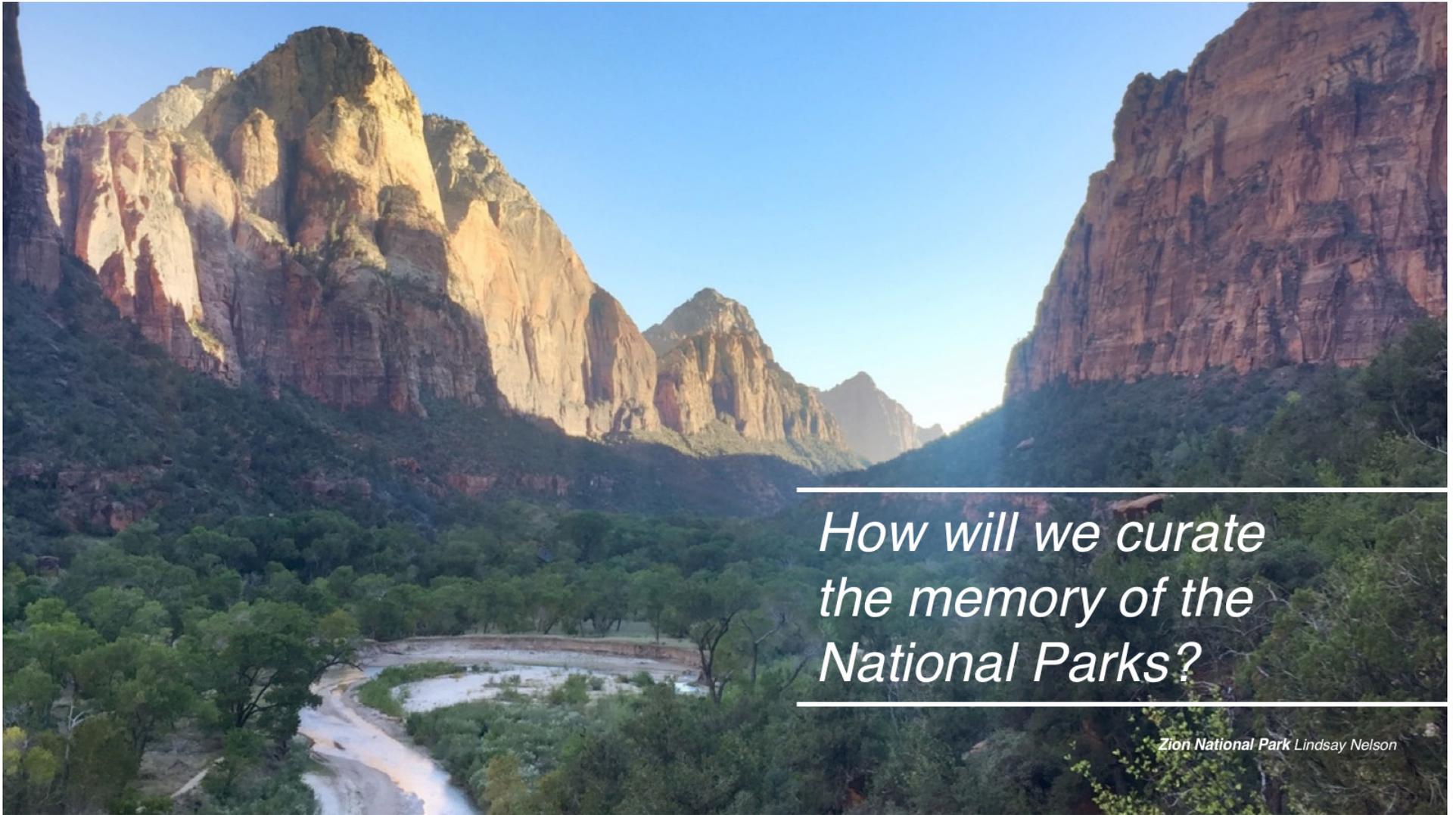


QR Codes Link to National Parks Website and Existing Apps

Digital Presence

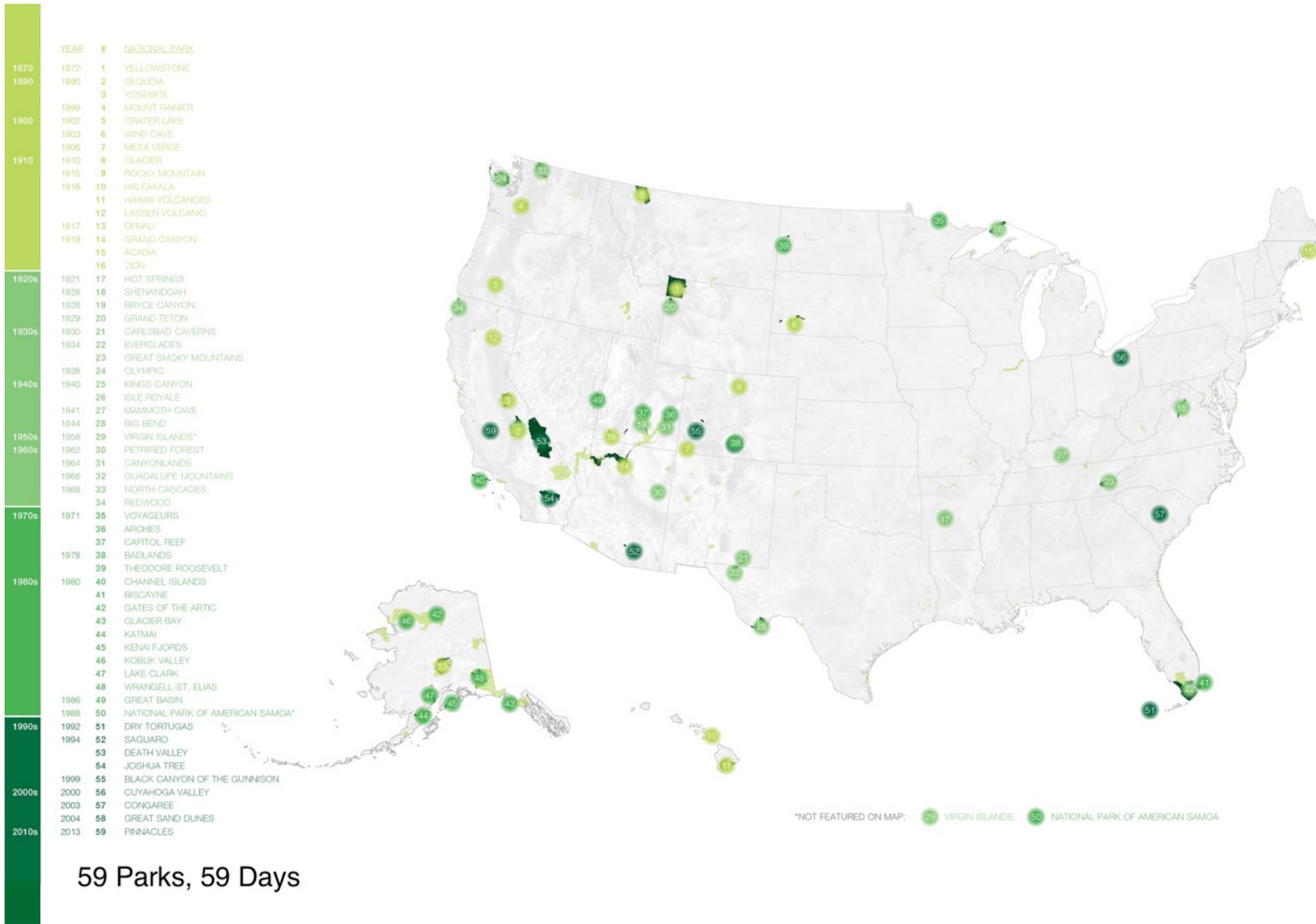
For more specific information, Metro riders can use QR (or Quick Response) Codes included in the displays to get links to existing National Park websites and phone-based applications.

Memorial Curation



*How will we curate
the memory of the
National Parks?*

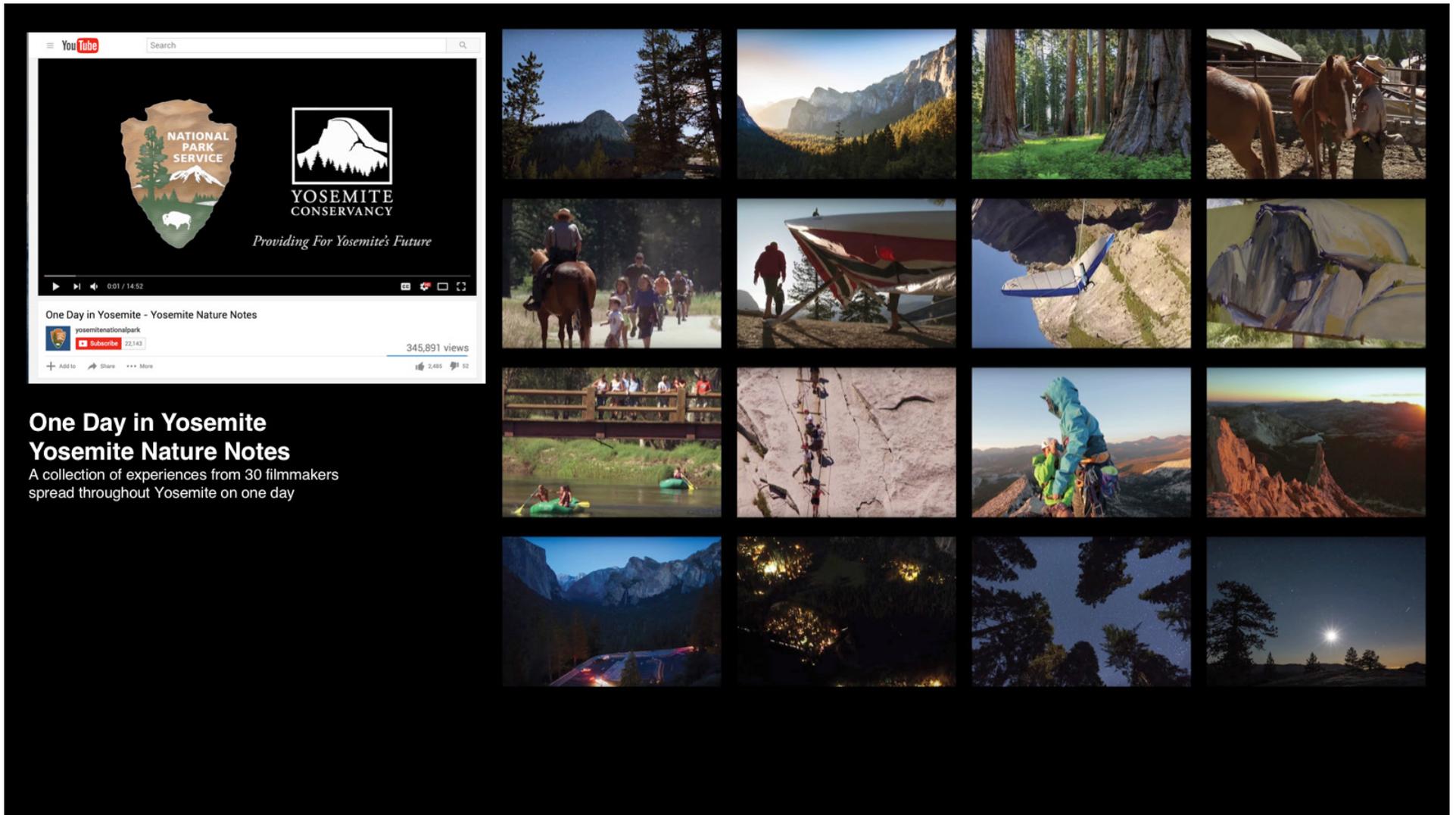
Zion National Park Lindsay Nelson



59 Parks, 59 Days

59 Parks, 59 Days

The memorial is designed to last for 59 days – one day for each of the 59 National Parks. The Parks will be featured in order of their establishment, thereby creating a timeline of the 100-year history of the National Park Service.

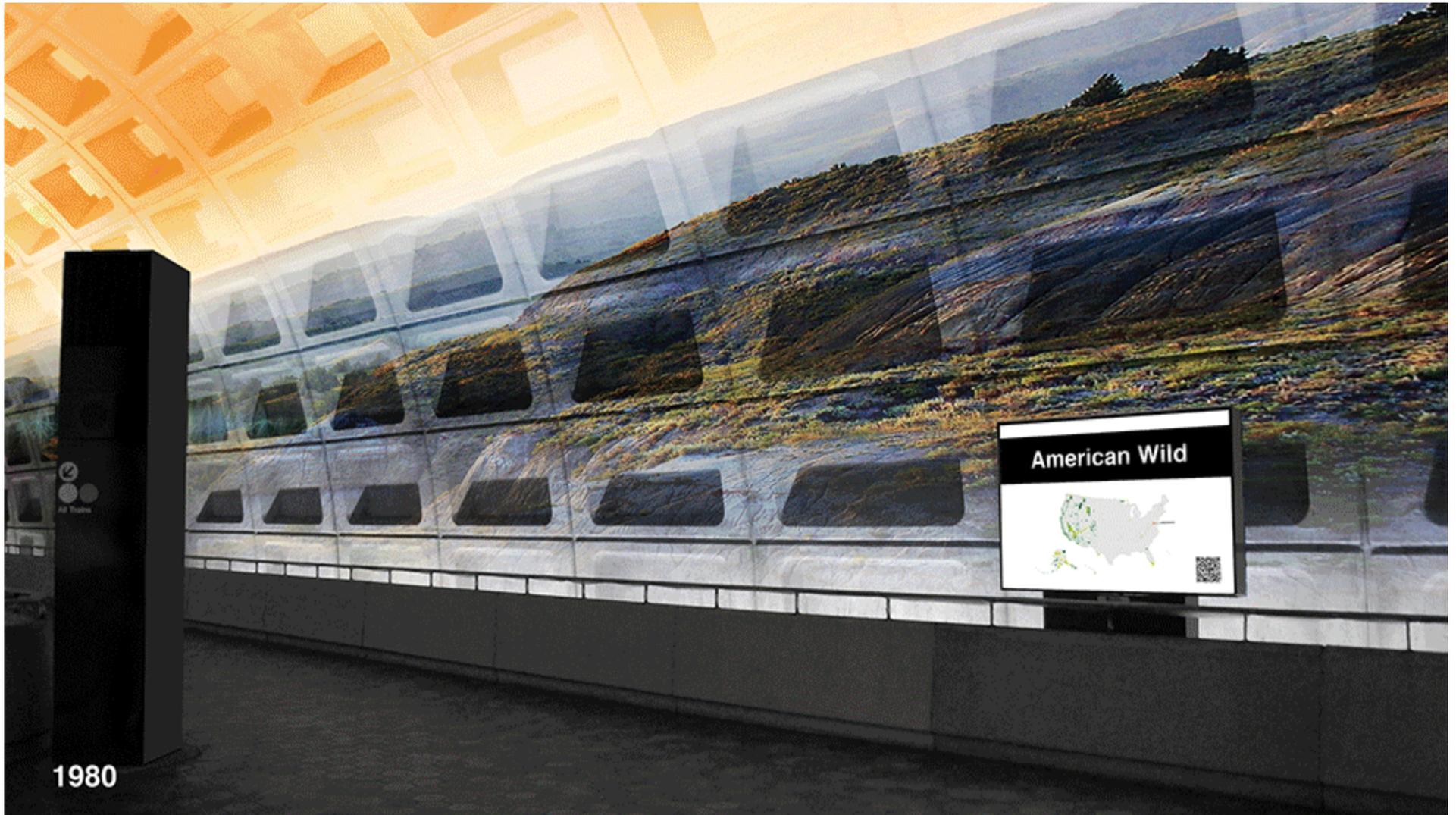


One Day in Yosemite Yosemite Nature Notes

A collection of experiences from 30 filmmakers spread throughout Yosemite on one day

One Fellow for Each of the National Parks

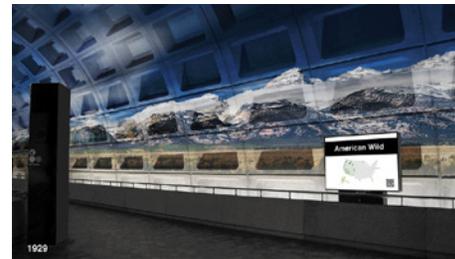
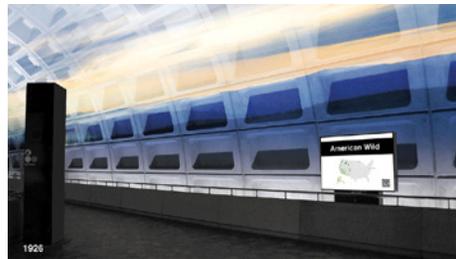
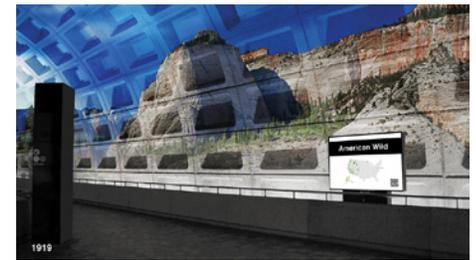
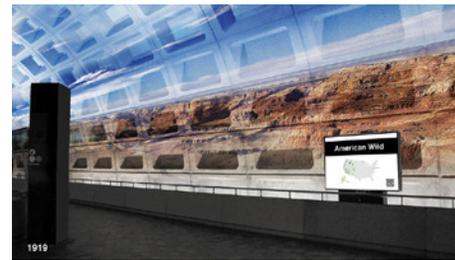
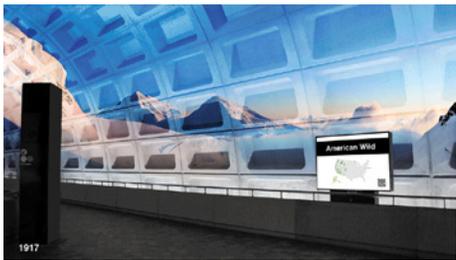
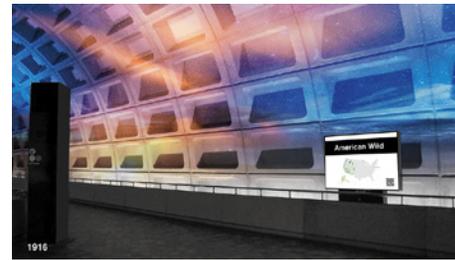
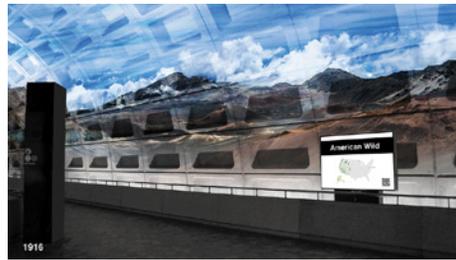
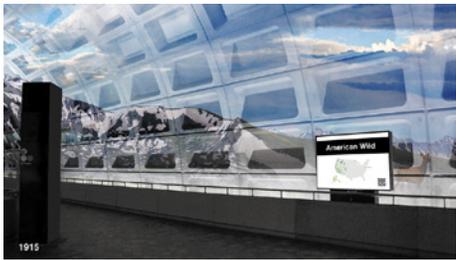
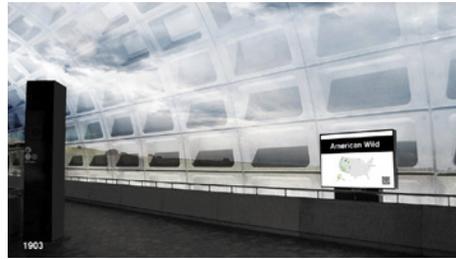
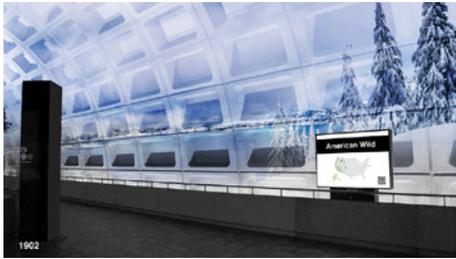
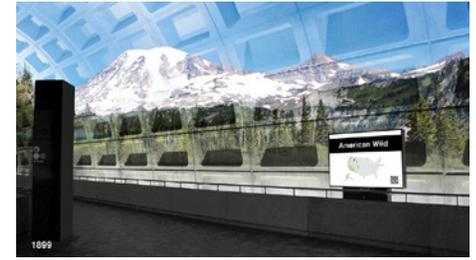
The National Park Service has a tradition of engaging artists. More recently a project called *One Day in Yosemite* engaged 30 filmmakers spread throughout the park gathering footage over 24 hours. Building upon both traditional and newer representation methods we propose that each park will be documented by a selected fellow to reveal the subtleties of a day in the park.

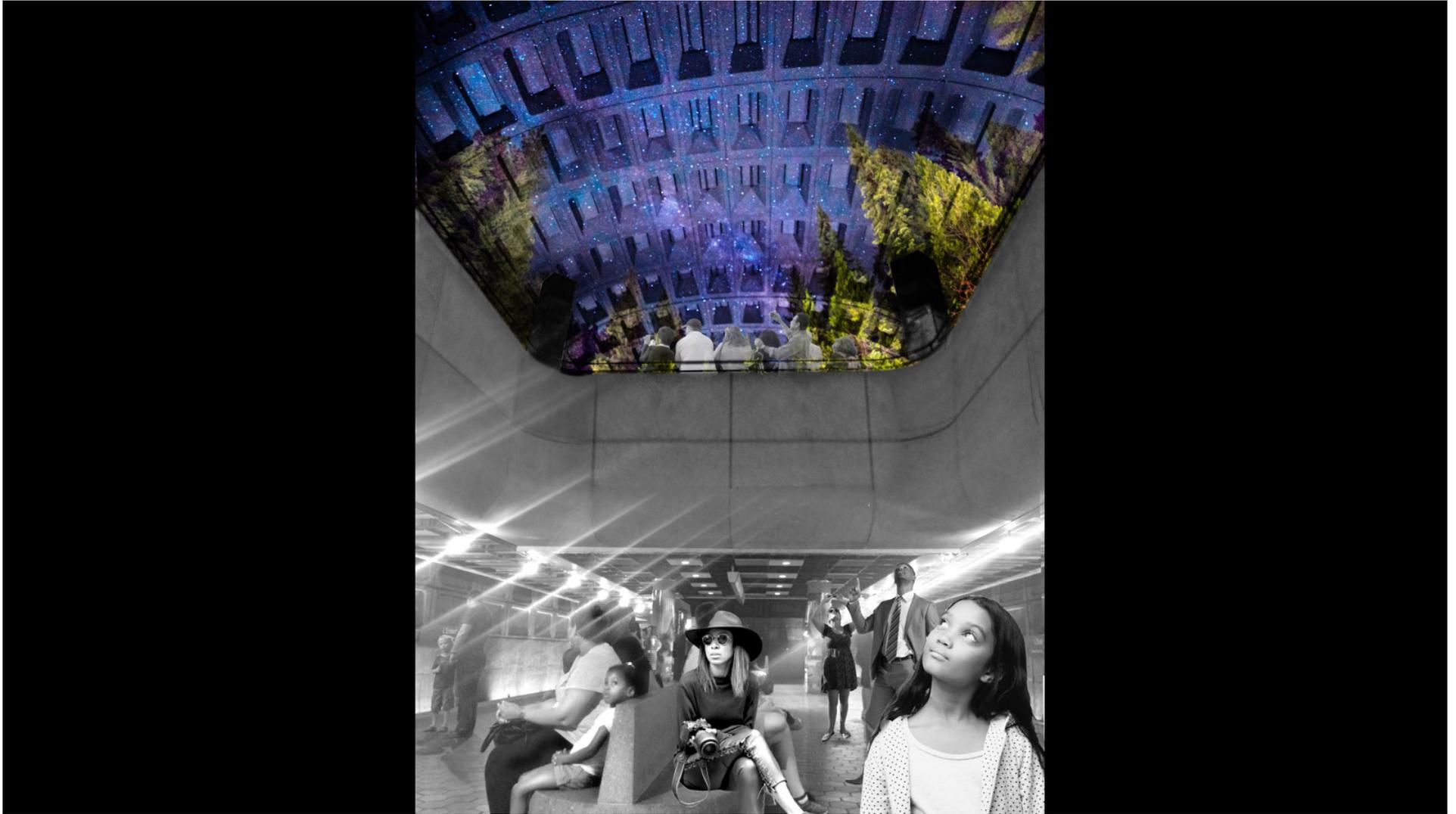


Sequential Animation

This chronological sequence showcases one image for each of the 59 National Parks during the 59-day installation.

Video: <https://vimeo.com/179702251>





View from Lower Platform

The installation on the upper level of the L'Enfant Plaza station can be seen from the platform below. Commuters seen here look beyond the platform to the sky of Sequoia National Park.



View Ascending Escalator

View Ascending Escalator

The station is transformed from a space of commuting to one of commemoration. Metro users seen here rise through the station beneath the formations of Arches National Park.



View from Passageway

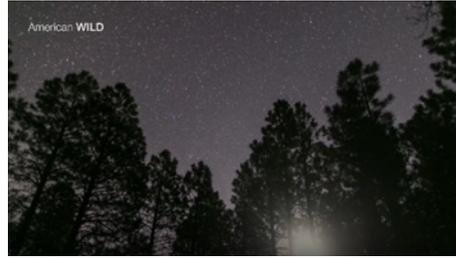
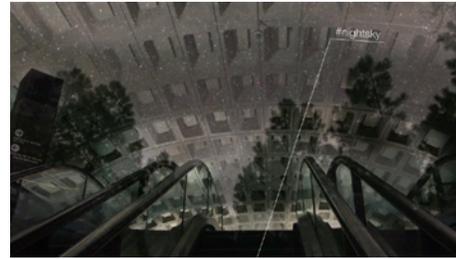
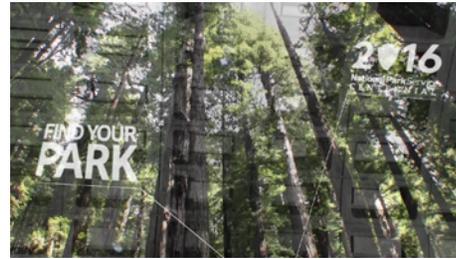
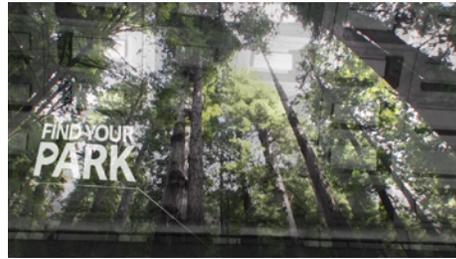
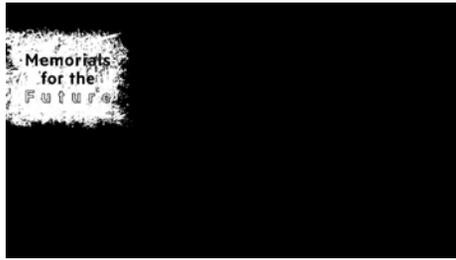
Full-scale, immersive video expands access to the National Park experience, raising awareness and creating memories that outlast the installation itself. Visitors seen here are transported to Yosemite National Park.



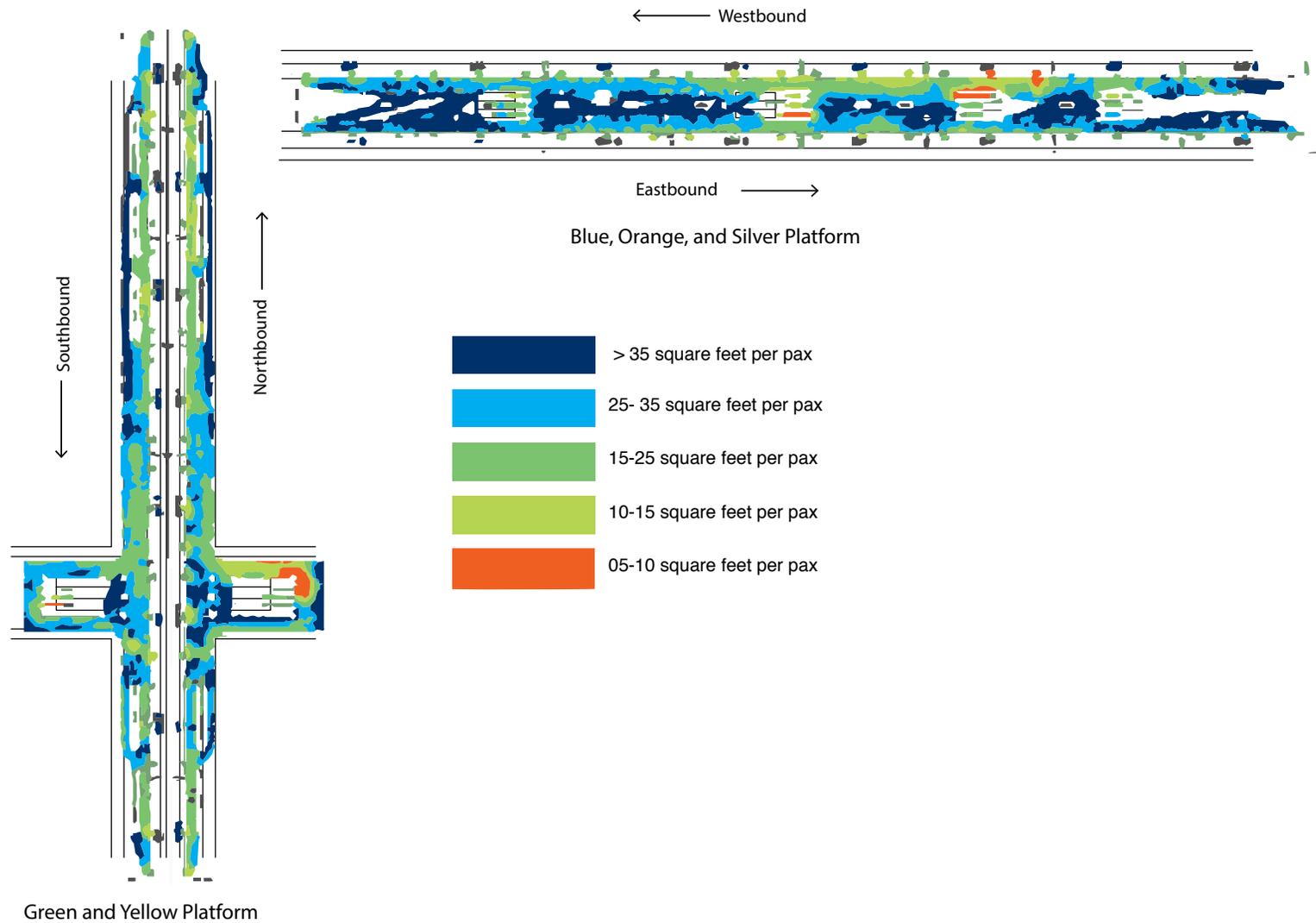
American Wild Video

The video offers a view of what it might be like to experience a dynamic and temporal memorial for the future: American Wild.

Video: <https://vimeo.com/177323383>



Technical Appendix



Memorial Location in Relation to Ridership Density

Study of L'Enfant platform ridership distribution by Metropolitan Washington Council of Governments. The L'Enfant Plaza Station is one of busiest stations in the Metrorail system and handles thousands of passenger transfers on four of the five Metrorail lines. It ranks third among all stations in absolute ridership growth over the last five years. (Not to scale.)

<http://planitmetro.com/2012/12/06/lenfant-plaza-station-capacity-improvements-study/>

About Panasonic PT-DW830

The Panasonic PT-DW830 8500 Lumens 1-Chip DLP Projector (Black) features a dynamic RGB Booster to provide high picture quality and color reproduction and DIGITAL LINK for All-in-One connectivity.

With the incorporation of the new 420W dual lamp and new lamp drive system, the PT-DW830 is able to deliver a high brightness of 8500 lumens in an incredibly compact body.

The Panasonic proprietary Dynamic RGB booster, which has been enhanced, provides images with brilliant color and brightness, optimizing lamp intensity of individual red, green and blue colors according to each scene. Detail Clarity Processor 3 improves the clarity, detail and depth of images and the System Daylight View 2 function also helps maintain picture quality, even in a bright room. The Series is 3D-compatible and supports various 3D formats including frame packing, side by side, top and bottom, line by line and simultaneous.

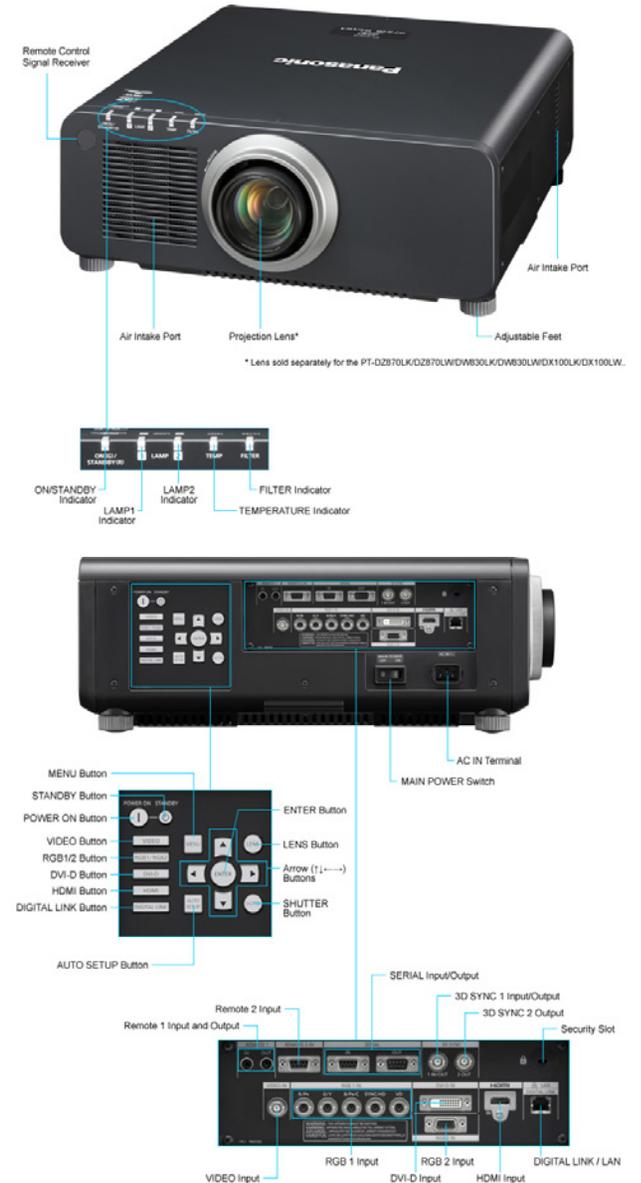
The projector delivers continuous immersive image quality thanks to its shielded optical system which effectively blocks dust and its new heat pipe system which enables an efficient cooling system. The PT-DW830 is also designed with a dual lamp system that eliminates projection interruption due to a lamp failure. The Lamp Relay mode alternates operation of each lamp to enable 24/7 operation of the projector. Furthermore, its lamp replacement cycle has been improved compared to conventional Panasonic 1-chip DLP models and is now up to 3000 hours in normal mode and 4000 hours in eco mode for reduced maintenance.

Panasonic PT-DW830 Features

- **Digital Link for simplified AV infrastructure:** The PT-DW830 Series offers more than just high picture quality, ease of maintenance and system reliability
- **Flexible installation and diverse functions:** Application flexibility is further enhanced through the lens being located in a centralized position in the projector chassis, by a wide range of movement in the motorized horizontal / vertical lens shift² and through 360-degree installation capability

High Resolution Projector Specification

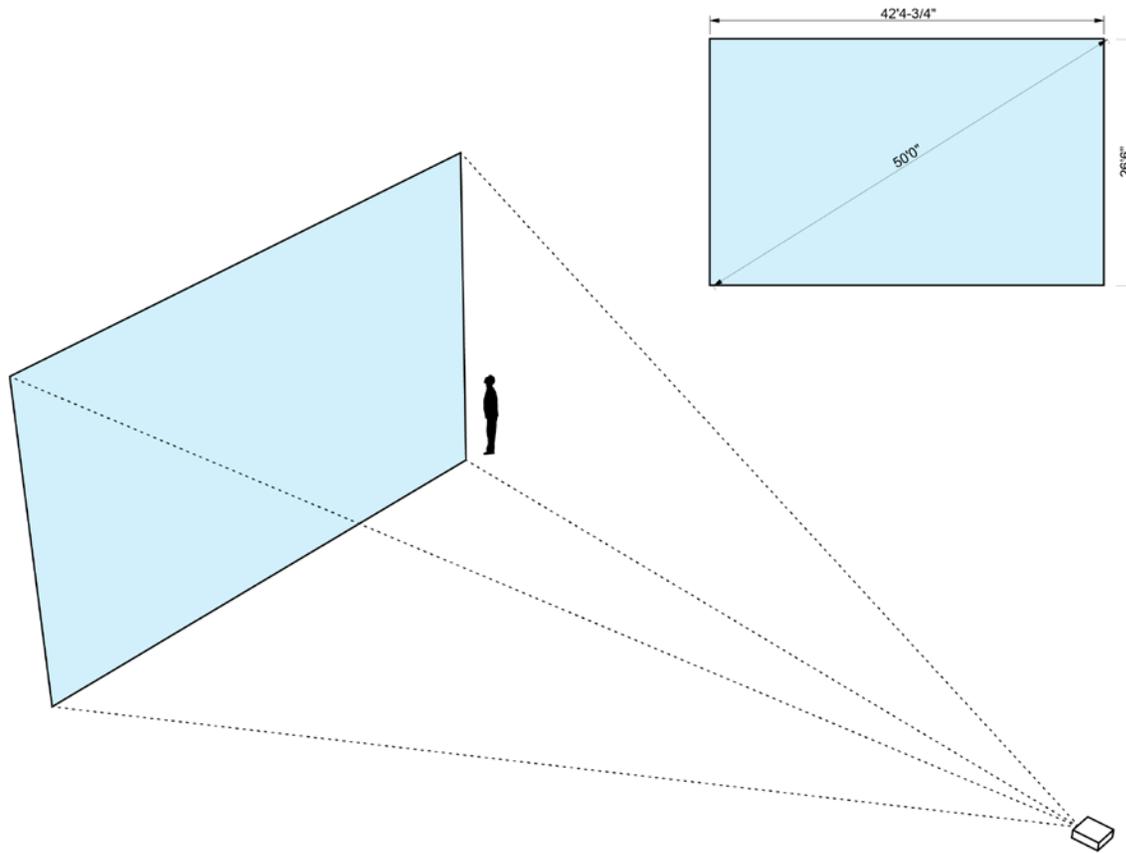
Panasonic PT-DW830 is an example of a high-resolution projector necessary for projection mapping at the L'Enfant Plaza Station. Above and on the following page are the specifications for the projector.



Power supply	120-240 V AC, 10-5.2 A, 50/60 Hz
Power consumption	1,030 W (1,060 VA) (0.3 W when STANDBY MODE set to ECO, 3 W when STANDBY MODE set to NORMAL)
Dissipation BTU	3,516 BTU/hour (without light PT-DW830: 3400 BTU/hour)
Panel size	16.5 mm (0.65") diagonal
Aspect ratio	16:10
Display method	DLP chip x 1, DLP projection system
Pixels	1024000 (1,280 x 800) pixels
Lens	Powered zoom (throw ratio 1.8-2.5:1), powered focus F 1.7-1.9, f 25.6-35.7 mm
Lamp	420 W UHM lamp x 2
Screen size (diagonal)	1.27-15.24 m (50-600 in), 1.27-5.08 m (50-200 in) with the ET-DLE055, 16:10 aspect ratio
Brightness	8,500 lm (dual-lamp, LAMP MODE: NORMAL)
Center-to-corner uniformity	90%
Contrast	10,000:1 (full on/full off, in dynamic iris 3 mode)
Resolution	1280 x 800 pixels (Input signals that exceed this resolution will be converted to 1,280 x 800 pixels.)
Scanning frequency: HDMI/DVI-D	fH: 15-100 kHz, fV: 24-120 Hz, dot clock: 25-162 MHz
Scanning frequency: RGB	fH: 15-100 kHz, fV: 24-120 Hz, dot clock: 162 MHz or lower

Scanning frequency: YPBPR (YCBCR)-1	fH: 15.75 kHz, fV: 60 Hz [480i (525i)] fH: 15.63 kHz, fV: 50 Hz [576i (625i)] fH: 45.00 kHz, fV: 60 Hz [720 (750)/60p] fH: 33.75 kHz, fV: 60 Hz [1035 (1125)/60i] fH: 28.13 kHz, fV: 50 Hz [1080 (1125)/50i] fH: 27.00 kHz, fV: 24 Hz [1080 (1125)/24p] fH: 33.75 kHz, fV: 30 Hz [1080 (1125)/30p] fH: 56.25 kHz, fV: 50 Hz [1080 (1125)/50p] fH: 31.50 kHz, fV: 60 Hz [480p (525p)] fH: 31.25 kHz, fV: 50 Hz [576p (625p)]
Scanning frequency: YPBPR (YCBCR)-2	fH: 37.50 kHz, fV: 50 Hz [720 (750)/50p] fH: 33.75 kHz, fV: 60 Hz [1080 (1125)/60i] fH: 28.13 kHz, fV: 25 Hz [1080 (1125)/25p] fH: 27.00 kHz, fV: 48 Hz [1080 (1125)/24sF] fH: 67.50 kHz, fV: 60 Hz [1080 (1125)/60p]
Scanning frequency: Video/YC	fH: 15.75 kHz, fV: 60 Hz [NTSC/NTSC4.43/PAL-M/PAL60], fH: 15.63 kHz, fV: 50 Hz [PAL/PAL-N/SECAM]
Optical axis shift: Vertical	+60 % from center of screen (powered)
Optical axis shift: Horizontal	+/-10 % from center of screen (powered)
Keystone correction range	Vertical +/-40deg.
Installation	Ceiling/floor, front/rear
HDMI IN	HDMI 19-pin x 1 (Deep Color, compatible with HDCP)
DVI-D IN	DVI-D 24-pin x 1 (DVI 1.0 compliant, compatible with HDCP, compatible with single link only)

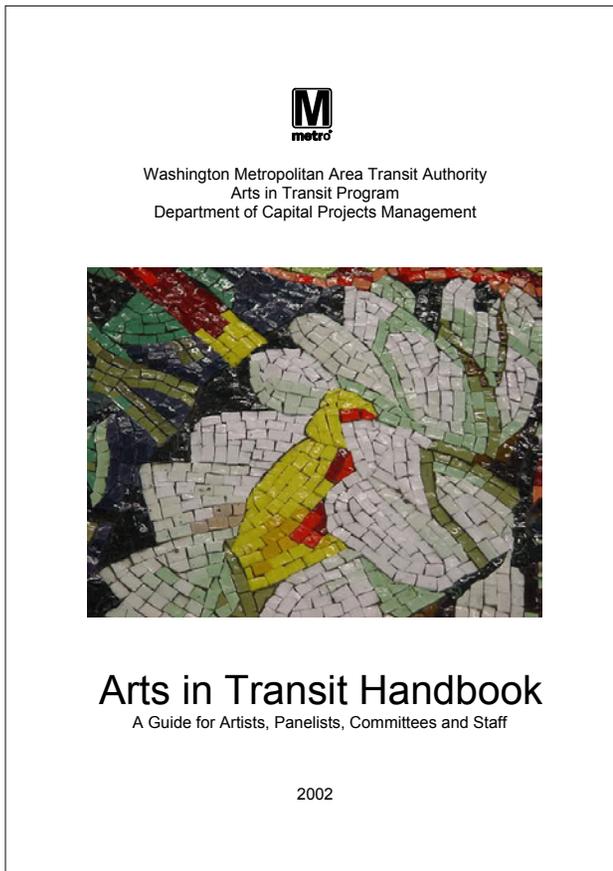
RGB 1 IN	BNC x 5 (RGB/YPBPR/YCBCR/YC x 1)
RGB 2 IN	D-Sub HD 15-pin (female) x 1 (RGB/YPBPR/YCBCR x 1)
3D SYNC 1 IN/OUT	BNC x 1 (3D timing signal)
3D SYNC 2 OUT	BNC x 1 (3D timing signal)
VIDEO IN	BNC x 1 (composite video)
SERIAL IN	D-sub 9-pin (female) x 1 for external control (RS-232C compliant)
SERIAL OUT	D-sub 9-pin (male) x 1 for link control
REMOTE 1 IN	M3 x 1 for wired remote control
REMOTE 1 OUT	M3 x 1 for link control (for wired remote control)
REMOTE 2 IN	D-sub 9-pin (female) x 1 for external control (parallel)
LAN / DIGITAL LINK	RJ-45 x 1 (for network and DIGITAL LINK (video/network/serial control) connection, 100Base-TX, compatible with Art-Net, compliant with PLink, Deep Color, compatible with HDCP)
Cabinet materials	Molded plastic
Operation noise	40 dB (dual lamp operation, lamp mode: NORMAL), 35 dB (dual lamp operation, lamp mode: ECO)
Operating temperature	0-45 deg.C (32-113 deg.F)
Operating humidity	10-80 % (no condensation)
Applicable software	Logo Transfer Software, Multi Projector Monitoring & Control Software
Dimensions	498x200x556mm (19.60x7.87x21.88") with supplied lens
Weight	18.3 kg (40.3 lbs) with supplied lens



Maintenance

This diagram demonstrates the size of image possible with Panasonic PT-DW830. As the memorial is designed for a 59 day lifetime the expectations for maintenance are minimal.

However, possible maintenance includes: cleaning the projector lenses, charging the batteries for the projectors as no electricity can be drawn from the L'Enfant Plaza Station and changing out the media content each day.



Arts in Transit: Helping Build Livable Communities through Art in Transit

Washington Metropolitan Area Transit Authority (Metro) provides the National Capital area with safe and reliable public transportation. Metro's Art in Transit Program installs artwork throughout the Metrorail system to enhance travel via Metro. Art in Transit works with artists, community groups, government agencies, and businesses to install artwork that captures the spirit and vitality of the region, making travel by Metro more attractive and inviting. The wonderful murals, mosaics, stained glass panels, sculpture, and other artwork on display at Metro stations demonstrate Metro's commitment to innovative design and high quality public art. The artwork installed throughout the Metrorail system adds beauty to stations and inspires a sense of belonging in the hundreds of thousands of customers served by Metrorail each day. For more information about the Art in Transit Program, see the website: <http://www.artsintransit.org/>

Feedback from Arts in Transit on American Wild

- AIT has never done a projection project in a DC Metro station
- No electricity can be used from the station an independent source such as a battery pack as generators are not allowed
- Schematic location of the projectors would need to be revised since they are 'touching' the station and no equipment may be attached to any furniture, pylons, signage, etc.
- Stand alone projector couldn't have any impact on station foot traffic
- Intensity of light - could only add to the light in the station not take any away
- ADA compliance required for lighting etc. For example, no flashing lights and no impact on the rider experience (dizziness, distraction, perception of space, etc)
- People cannot be distracted by the installations
- images would have to be still or very slow moving
- Choice of images - least busy of images would be best received / most likely to be selected for use in the station
- Not obscuring any of the station signage - projection not possible below a certain height
- Recommend that we stay above the height of the train as a safety precaution
- Installation could not have any impact on the movement of passengers in the station
- Entire review process would take 6 months - 1 year
- Arts in Transit - would be through the Metro Board of Directors - 4 meetings before - 2 months
- Important point. No project would be considered by AIT without external funding having been secured
- Permits would have to be requested
- Installation would have to happen off hours when the Metro is not running
- Take into consideration compensation of Metro employees involved in the project.

Arts in Transit

During the design process the design team spoke with the Arts in Transit director who provided provide insights in the process of developing a project with the Art in Transit program. This feedback (at right) establishes the specific challenges and limitations of

installing design work in the Washington DC Metro. As indicated in the feedback, to move forward the project would need to be revised to meet the requirements of the program and standards of the agency.

Name	Cost	Quantity	Total
Panasonic PT-DW830	\$6,500.00	16	\$104,000.00
HDMI SD Card Reader + Cables	\$25.00	16	\$400.00
512 GB Micro SD Card	\$50.00	16	\$800.00
Battery Pack	\$400.00	16	\$6,400.00
Technology Costs			\$111,600.00
Name	Cost	Quantity	Total
Projector Consultants Fees	\$20,000.00	1	\$20,000.00
Team Travel	\$10,000.00	1	\$10,000.00
Design Fees	\$20,000.00	1	\$20,000.00
Installation + Maintenance Labor Hourly	\$75.00	80	\$6,000.00
Artist Stipend for Content (NEH Grant)	\$3,000.00	59	\$177,000.00
Fees + Labor			\$233,000.00
Permitting	\$5,000.00	2	\$10,000.00
Insurance	\$10,000.00	1	\$10,000.00
Overhead / Indirect Costs	\$5,000.00	1	\$5,000.00
Contingency	\$20,000.00	1	\$20,000.00
Other			\$45,000.00
Total Estimated Costs			\$389,600.00

Schematic Budget

The preliminary budget shown above is drawn from past experience and schematic design. A more complete budget would require specific consultants and construction drawings as well as further conversations with the National Park Service, Arts in Transit, and the Washington Metropolitan Area Transit Authority. Sixteen projectors are shown in the proposal but this number is negotiable.