



ALASKA NATIONAL LAB DAY

MAY 30-31, 2018



Welcome!

aknatlabday.org

#AKNatLabDay



UNIVERSITY OF
ALASKA
FAIRBANKS

Welcome to National Lab Day!



Whether you're an Alaskan, a first-time visitor to our beautiful state, or somewhere in between, I'm confident that you'll find this event both informative and inspiring.

That's because Alaska is an Arctic leader, a living laboratory for our nation, and the perfect proving ground for new technologies.

Throughout these sessions, you'll be able to explore and learn more about our state's unique opportunities and challenges—from our vast energy and mineral deposits, to the high cost of power generation in our villages, receding sea ice along our coasts, and melting permafrost that threatens our infrastructure.

Over the next few days, I encourage you to focus on forging meaningful partnerships between our communities, academia, industry, the national labs, and government. This is our chance to form an enduring bond that will help us pioneer solutions that can be replicated not just here, but around the world, as we seek to address a range of energy and environmental issues.

A special thanks to the University of Alaska Fairbanks for hosting National Lab Day and to the Department of Energy for making it possible.

I also want to thank you for attending—I hope you have a great time, and get out to enjoy the beauty and wonder of our great state.

Senator Lisa Murkowski (R-Alaska)
Chairman of the Senate Committee on Energy and Natural Resources



Welcome to the University of Alaska Fairbanks.

UAF is a global leader in Arctic research, and with personnel and facilities uniquely positioned to address our energy and security challenges, we serve as a strategic partner to the national labs. Alaska National Lab Day is an opportunity for UAF and the national labs to build on existing partnerships and build new ones that will enhance both the university's and the labs' ability to meet modern energy and security challenges in Alaska and across the Arctic. Already, some three dozen research projects at UAF are being conducted in cooperation with national labs.

As Alaska's only Land, Sea and Space Grant University, and with programs ranging from workforce development to Ph.D.s, we are able to engage a wide range of students in important research that also provides practical learning experiences. Many university graduates later bring their broad understanding of the Arctic and northern regions to key state and federal roles.

We are grateful to be able to host this event, and we look forward to helping develop new initiatives that will benefit the state and the nation.

Daniel M. White, Chancellor, UAF

I am pleased to welcome you to the University of Alaska Fairbanks campus and to our home in Alaska. Thank you for joining us for Alaska National Lab Day events. Together we will work to identify new opportunities for collaboration between researchers and organizations within the University of Alaska and the Department of Energy's national laboratories.

Researchers at the DOE's national laboratories are among our nation's best, and they have access to the world's premier scientific facilities. University of Alaska researchers live and work in the Arctic and can bring that experience to bear as we collaborate to resolve problems related to energy, climate and the environment.

We have organized sessions to address the greatest challenges and opportunities confronting Alaska and Arctic researchers, as well as tours of our laboratories, local points of interest and research sites.

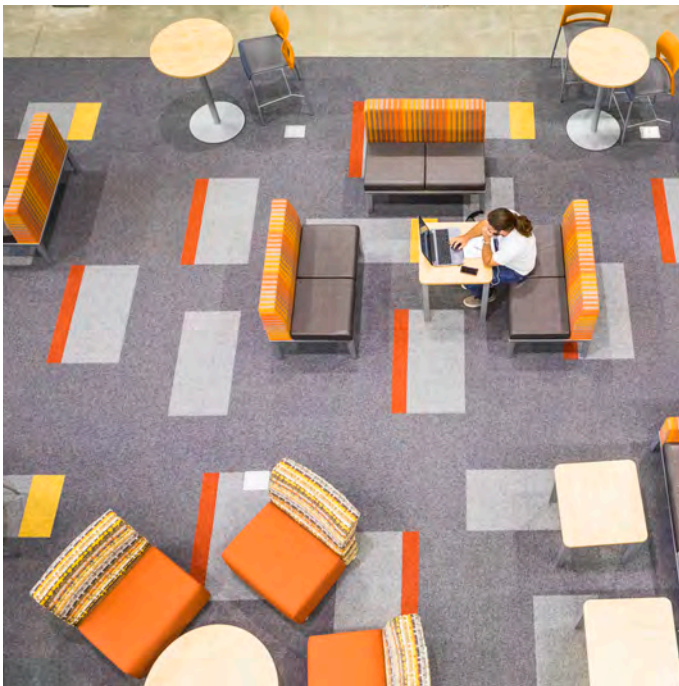
I encourage you to strengthen your networks, broaden your horizons and connect with internationally renowned scientists.

We look forward to the big ideas we'll generate together over the course of the next two days.

Larry Hinzman, Vice Chancellor for Research, UAF



UAF Campus Information



UAF photo by JR Ancheta



UAF photo by Todd Paris

Refreshments

Engineering Learning and Innovation Facility, Usibelli Coal Mine Student Atrium (main lobby)

All-day coffee/tea service with light morning and afternoon snacks provided (lobby pictured above, left).

**Included with conference registration*

Arctic Java, Wood Center

Open 7:30 a.m.–5 p.m. On-the-go coffee, espresso, baked goods, sandwiches and salads.

Dine 49, Wood Center

Open 11 a.m.–1 p.m. Lunch only.
Meals at Dine 49 are not included with registration.

UA Museum Café, UA Museum of the North

Open 9 a.m.–4 p.m. Snacks and locally roasted coffee and espresso.

A Meeting Space

The Nook

A quiet common area providing wireless internet, conference tables, data ports and meeting spaces (pictured above, right).

Location: Bunnell, Room 319

Open: 8 a.m.–9:30 p.m.

Emergency and Safety

Security Escort Service: 907-474-7721

Park: 907-474-PARK (7275)

Ride: 907-474-RIDE (7433)

University Police Dept: 907-474-7721

2018-2019 Campus Tours and Attractions

UAF Campus Walking Tour

Get to know UAF on student-led, 90-minute tours. Start by checking in at the kiosk located in the Signers' Hall lobby. Free.

Web: www.uaf.edu/admissions/visit/

Days & Times: Weekdays, 10 a.m., 2:30 p.m.

UA Museum of the North

Discover millions of years of biodiversity and thousands of years of cultural traditions at one of Alaska's premier visitor attractions. Entry fee.

Web: www.uaf.edu/museum/ Phone: 907-474-7505

Days & Times: Mon.-Sat., 9 a.m.-5 p.m.

Geophysical Institute

Visit this world-renowned institute, where scientists study everything from the center of the Earth to the center of the sun. Free. Phone: 907-474-7558

Days & Times: Self-guided tour, weekdays,
8 a.m.-4 p.m.

Georgeson Botanical Garden

Enjoy seeing flowers and vegetables starting to flourish in Alaska's long summer days. Don't miss the popular children's garden boasting the largest hedge maze in Alaska. Suggested donation \$5.

Web: www.georgesonbotanicalgarden.org

Days & Times: Daily, 8 a.m.-8 p.m.

International Arctic Research Center

Explore our lobby displays and get a glimpse of the dynamic state of the Arctic and the abundance of Arctic and global climate change research conducted at IARC.

Free. Phone: 907-474-1544

Days & Times: Weekdays, 8 a.m.-4 p.m.

Robert G. White Large Animal Research Station

Get up close and personal with reindeer and muskoxen, survivors from the Ice Age. Gift shop on site with items by Alaska artists. Entry fee. Web: www.uaf.edu/lars/

Phone: 907-474-5724

Days & Times: Daily, 9:30 a.m.-4:30 p.m.



Be inspired by the light of the Aurora Borealis. Renew your energy under the Midnight Sun. Experience the warmth of Fairbanks—Alaska's Golden Heart—and the gateway to Denali, Interior and Arctic Alaska. Make the Morris Thompson Cultural and Visitors Center your first stop to planning your Alaskan adventure.

Morris Thompson Cultural and Visitors Center

101 Dunkel Street • Downtown Fairbanks
8am – 9pm Summer • 8am – 5pm Winter



www.explorefairbanks.com
(907) 456-5774
info@explorefairbanks.com

Agenda

Goals and Anticipated Outcomes

The purpose of Alaska National Lab Day is to create links and explore opportunities for partnerships between the Department of Energy national laboratories and the University of Alaska, with the goal of leveraging America's national laboratories to advance Alaska's and the nation's goals for growing the economy, developing and implementing sustainable energy solutions, and understanding the implications of a changing Arctic environment. Our specific objective is to increase awareness and understanding of Alaska's unique energy-related resources, infrastructure and environment in order to:

- 1) Identify research areas and mechanisms through which national labs could contribute to addressing Alaska's energy-related challenges; and
- 2) Identify opportunities to utilize Alaska expertise and resources to support research in energy, climate and security at the national level.

Wednesday, May 30

8–9 a.m.

Registration

ELIF, Usibelli Coal Mine Student Atrium (main lobby)

Check-in and registration, coffee and refreshments provided.

9–9:15 a.m.

Introduction and Welcome

Schaible Auditorium

- Jim Johnsen, University of Alaska President
- Daniel M. White, UAF Chancellor

9:15–10:15 a.m.

Opening Remarks

Schaible Auditorium

Moderated by Larry Hinzman, UAF Vice Chancellor for Research

- Lisa Murkowski, U.S. Senator for Alaska
- Paul Dabbar, DOE Under Secretary for Science
- Arun Majumdar, Stanford University

10:15–10:30 a.m.

Break – Sponsored by Battelle

ELIF, Usibelli Coal Mine Student Atrium (main lobby)

Coffee and refreshments provided.

10:30–11:45 a.m.

Plenary Panel – Alaska as a “Living Laboratory”

Schaible Auditorium

Moderated by Arun Majumdar, Stanford University

With its wide range of resources, geological and environmental regions, geographic setting, and demographic diversity, Alaska provides a diverse context for exploring and enhancing the energy technologies needed by our nation and the world. Leaders from

outside and within the state share their perspectives regarding identification and leverage of these “living laboratory” opportunities.

- Bruce Walker, DOE Assistant Secretary, Office of Electricity Delivery and Energy Reliability
- Rich Carlin, Office of Naval Research
- Janet Reiser, Alaska Energy Authority
- Meera Kohler, Alaska Village Electric Cooperative
- Gwen Holdmann, UAF Alaska Center for Energy and Power

11:45 a.m.–noon

Break

Walk to lunch and showcase venue

Noon–1:30 p.m.

Lunch and National Laboratory Showcase

ELIF, ConocoPhillips Alaska High Bay Structural Testing Lab (first floor)

The Department of Energy and its national laboratories are global leaders for scientific discovery, energy innovation and national security technology development. Visit the National Lab Showcase to learn about the labs’ world-leading research and scientific user facilities, how to partner with them, and opportunities for collaboration.

1:30–2:45 p.m.

Plenary Panel – What is a National Lab?

Schaible Auditorium

Moderated by Mark Peters, Idaho National Laboratory and Paul Dabbar, DOE Under Secretary for Science

The personnel, facilities and relational network resources of the Department of Energy’s national laboratories are deep and diverse. The panel provides an introduction to the overall national lab system, with special attention to their roles in scientific discovery and application, education and equipping of the next generation of scientists, support for small business innovation and entrepreneurship, and impact as regional economic drivers.

- Stephen Ashby, Pacific Northwest National Laboratory
- D. E. “Dori” Ellis, Sandia National Laboratory
- Annie Kersting, Lawrence Livermore National Laboratory
- Martin Keller, National Renewable Energy Laboratory
- Moe Khaleel, Oak Ridge National Laboratory
- Paul Kearns, Argonne National Laboratory
- Sean Plasynski, National Energy Technology Laboratory
- Martin Schoonen, Brookhaven National Laboratory
- Adam Schwartz, Ames National Laboratory
- Terry Wallace, Los Alamos National Laboratory
- Mike Witherell, Lawrence Berkeley National Laboratory

2:45–3 p.m.

Break – Sponsored by Battelle

ELIF, Usibelli Coal Mine Student Atrium (main lobby)

Coffee and refreshments provided.

3–4:15 p.m.

Plenary Panel – Alaska Industry and Energy

Schaible Auditorium

Moderated by George Roe, UAF ACEP

Panelists describe key sectors in Alaska’s statewide industrial base and provide insights about their requirements for electrical, thermal and transportation energy. The panel’s scope includes both current practice and future trends in the maritime, mining and petroleum sectors, and possible value-add opportunities associated with evolution in manufacturing technology.

- Brad Moran, UAF College of Fisheries and Ocean Sciences
- Rajive Ganguli, UAF College of Engineering and Mines
- John Barnes, Hilcorp Alaska LLC
- Craig Blue, Oak Ridge National Laboratory
- Nolan Klouda, University of Alaska Anchorage Center for Economic Development

4:15–4:30 p.m.

Break

4:30–5:45 p.m.

Plenary Panel – Successful University/ National Lab Collaboration

Schaible Auditorium

*Moderated by Nettie LaBelle-Hamer, UAF Geophysical
Institute*

While multiple pathways are available to facilitate research collaboration, often it is difficult to know how to start. Some ideas include teaming on responses to specific funding opportunities and working together in technical committees and meetings. The genesis of a long-term, large-scale collaboration can be elusive, even with Cooperative Research and Development Agreements (CRADAs) and other funding mechanisms in place. Researchers from the University of Alaska Fairbanks and Department of Energy share from their experience leveraging these flexible coordination techniques and discuss how they were able to get started.

- Carol Adkins, SNL
- Stan D. Wulschleger, ORNL
- Bill Farris, NREL
- Erin Whitney, UAF ACEP

5:45–6:15 p.m.

Break/Transfer to Reception Site via Bus

Meet bus at the Wood Center Transit Plaza

Refer to map on page 14 for directions.

6–8 p.m.

Reception – Sponsored by ClearPath

UA Museum of the North

**Hors d'oeuvre and libations included with registration*

Network and connect! Join us at the opening night reception. This special two-hour event will convene leaders from industry, the national labs, university research and our local community. If you're interested in networking, collaborating and talking about research and innovation partnerships, don't miss this event!

Thursday, May 31

7:30–8 a.m.

Coffee and Morning Snack

ELIF, Usibelli Coal Mine Student Atrium (main lobby)

8–9:30 a.m.

Concurrent Panels – Session 1

Locations listed by panel below

Experts from Alaska and the DOE labs will provide their perspectives on key issues, discuss research initiatives and interests, explore future opportunities, and respond to questions from one another and the audience – all focused on increasing collaboration in each theme area.

Panel 1A: Developing Locally and Globally Relevant Energy Solutions

BP Design Theater, ELIF 401

Alaska is home to over half of the microgrids in the U.S. How can this living laboratory help develop next-generation technologies that provide communities in Alaska, the United States and the world with affordable, reliable energy?

Co-chairs: Mariko Shirazi, UAF ACEP
Peter Green, NREL

Panelists:

- Abraham Ellis, SNL
- Rob Hovsopian, INL
- Ben Kroposki, NREL
- Carl Imhoff, PNNL
- Peter Larsen, LBNL

Panel 1B: Exploring and Accessing the Energy Field of the Future

Schaible Auditorium

Alaska has vast untapped fossil energy resources – onshore and offshore, oil/natural gas/coal as well as emerging threats/opportunities like methane from decomposing subsurface biomass and methane hydrate deposits. And there may be applications for small modular reactors. How can we access and leverage these resources, given the region's challenging and sensitive environment?

Co-chairs: Brent Sheets, UAF Petroleum Development Laboratory
Randy Gentry, NETL

Panelists:

- Todd Brinkman, UAF Institute of Arctic Biology
- Jared Ciferno, NETL
- Ronnie Daanen, Alaska Division of Geological and Geophysical Surveys
- Casie Davidson, PNNL
- Sheldon Fisher, Commissioner of Revenue, State of Alaska
- Rajive Ganguli, UAF CEM
- John Hendrix, State of Alaska
- Dave Lyons, NETL
- Sean Plasynski, NETL
- Pete Stokes, Petrotechnical Resources Alaska LLC

Panel 1C: Natural Hazards and Defense/Aerospace

ELIF, ConocoPhillips Alaska High Bay Structural Testing Lab (first floor)

Alaska is a complex and vast geophysical laboratory. The University of Alaska has a wide array of ground, airborne and space test resources that can gather the data needed to understand and evaluate energy system/environment integration and interactions. How can university and DOE researchers best leverage these personnel, research facilities and data repositories?

Co-chairs: Bob McCoy, UAF Geophysical Institute
Matt Heavner, SNL

Panelists:

- Nick Adkins, UAF Alaska Center for Unmanned Aircraft Systems Integration
- Scott Arko, UAF Alaska Satellite Facility
- Jill Brandenberger, PNNL
- Mark Petri, ANL
- Artie Rodgers, LLNL
- Curt Szuberla, UAF GI

9:30–10 a.m.

Networking Break

ELIF, Usibelli Coal Mine Student Atrium (main lobby)

Coffee and refreshments provided.

10–11:30 a.m.

Concurrent Panels – Session 2

Locations listed by panel below

Experts from Alaska and the DOE labs will provide their perspectives on key issues, discuss research initiatives and interests, explore future opportunities, and respond to questions from one another and the audience — all focused on increasing collaboration in each theme area.

Panel 2A: Energy and Defense Systems in the North

ELIF, ConocoPhillips Alaska High Bay Structural Testing Lab (first floor)

Energy and cybersecurity are major challenges for defense and homeland security forces operating in Alaska. Military installation energy systems that integrate heat and power services provide opportunities for collaboration with communities, industries and utilities regarding their critical infrastructure. These military sites can also evaluate and implement cybersecurity provisions relevant to both military and civilian energy systems. In addition to other energy technologies, military installations can serve as early adopter partners with the civilian sector to address technology risk, permitting, data acquisition, transportation logistics, installation provisions and workforce development challenges related to small modular reactors. How can collaboration and complementary research bring needed technologies to Alaska's defense and homeland security installations, as well as to citizens and businesses of Alaska?

Co-chairs: Jeff Stepp, Fairbanks North Star Borough
Patrick Balducci, PNNL

Panelists:

- Chad BonDurant, U.S. Air Force
- Michael Forcht, USAF
- John Wagner, INL
- Bruce Walker, DOE OEDER

Panel 2B: Enabling and Empowering the Energy of Alaska's Entrepreneurs

BP Design Theater, ELIF 401

Alaska's economy currently depends primarily on extraction of petroleum, minerals, seafood and timber. How can we attract or develop value-added, sustainable industries and encourage small businesses by fostering innovation and local entrepreneurship to complement established resource extraction approaches and to introduce new commercial initiatives?

Co-chairs: Christi Bell, UAA Business Enterprise Institute
Elsie Quaite-Randall, LBNL

Panelists:

- Dane Boysen, Modular Chemical Inc.
- Lee Cheatham, PNNL
- Clay Koplin, Cordova Electric Cooperative
- Mary Monson, SNL

Panel 2C: Navigating the Changing Arctic

Schaible Auditorium

The Arctic's vulnerability to the changing climate has global repercussions from impacts on the natural environment (water, land, air) and the flora/fauna within it. How can we better understand these changes, avoid problems and take advantage of opportunities?

Co-chairs: Hajo Eicken, UAF IARC
D. E. "Dori" Ellis, SNL

Panelists:

- Liz Cravalho, NANA Regional Corp.
- Gary Geernaert, DOE BER
- Bill Schnabel, UAF Institute of Northern Engineering
- Martin Schoonen, BNL
- Cathy Wilson, LANL

11:30 a.m. – Noon

Break/Walk to Lunch Venue

Wood Center

Refer to map on page 14 for directions.

Noon – 1:30 p.m.

Lunch/Closing Remarks/Next Steps

Sponsored by the University of California

Wood Center Ballroom

Facilitated by Arun Majumdar, Stanford University

- Larry Hinzman, UAF
- Gwen Holdmann, UAF ACEP
- Mark Peters, INL

1:30 p.m.

Adjourn – Local Tours

Leave from Wood Center Transit Plaza

Local Tours

Thursday, May 31

1:30–6 p.m.

Alaska Energy Systems

Wood Center Transit Plaza

**Pre-registration required*

Find out about microgrid research at UAF's combined heat and power plant, and the Alaska Center for Energy and Power. Gain additional insight into Alaska's diverse energy systems at ACEP's Power Systems Integration Laboratory and the Cold Climate Housing Research Center.

1:30–6 p.m.

Evidence of Climate Change

Wood Center Transit Plaza

**Pre-registration required*

Tour the Fairbanks area to see impacts of a changing climate on permafrost, infrastructure and the ecosystem. See the U.S. Army Corps of Engineers permafrost tunnel to learn about mechanics of permafrost and stop by the trans-Alaska oil pipeline viewing station.

Friday, June 1

10 a.m.–4 p.m.

Poker Flat Research Range

Register separately (\$75) at aknatlabday.org

Meet in the Akasofu Building lobby to catch your shuttle that will drive you 30 miles northeast of Fairbanks to UAF's Poker Flat Research Range, the only high-latitude rocket range in the United States. Enjoy this private, behind the scenes tour.

Tour includes lunch at PFRR. Stop en route to visit the trans-Alaska oil pipeline viewing station.

Learn more at pfrr.alaska.edu.

8 a.m.–9 p.m.

Chena Hot Springs Resort

Register separately at chenahotsprings.com.

Visit Chena Hot Springs Resort to see its microgrid with the lowest-temperature commercial geothermal power plant in the world (400 kW) and the only year-round operating greenhouse in Interior Alaska.

Chena Hot Springs' Aurora Ice Museum is cooled via hot water using an absorption refrigeration system.

Have a drink in an ice-carved glass before taking a dip in the hot springs.

Event Sponsors



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Thank you for your support!



UAF photo by Todd Paris

Fairbanks Shuttle Schedules

Pike's Waterfront Lodge – Wednesday, May 30		
Morning Departures		Arrivals
Pike's	---	UAF
7:40 a.m.	---	8:00 a.m.
8:25 a.m.	---	8:40 a.m.
Evening Departures		Arrivals
Wood Center Transit Plaza	Museum	Pike's
5:50 p.m.	6:00 p.m.	6:10 p.m.
---	7:00 p.m.	7:10 p.m.
---	7:50 p.m.	8:05 p.m.

SpringHill Suites – Wednesday, May 30		
Morning Departures		Arrivals
SpringHill	---	UAF
7:40 a.m.	---	8:00 a.m.
8:25 a.m.	---	8:45 a.m.
Evening Departures		Arrivals
Wood Center Transit Plaza	Museum	SpringHill
5:50 p.m.	6:00 p.m.	6:20 p.m.
---	7:00 p.m.	7:20 p.m.
---	7:50 p.m.	8:10 p.m.

Pike's Waterfront Lodge – Thursday, May 31		
Morning Departures		Arrival
Pike's	---	UAF
7:20 a.m.	---	7:40 a.m.
Afternoon Departures		Arrival
Wood Center Transit Plaza	Pike's	Airport
1:45 p.m.	2:15 p.m.	2:30 p.m.

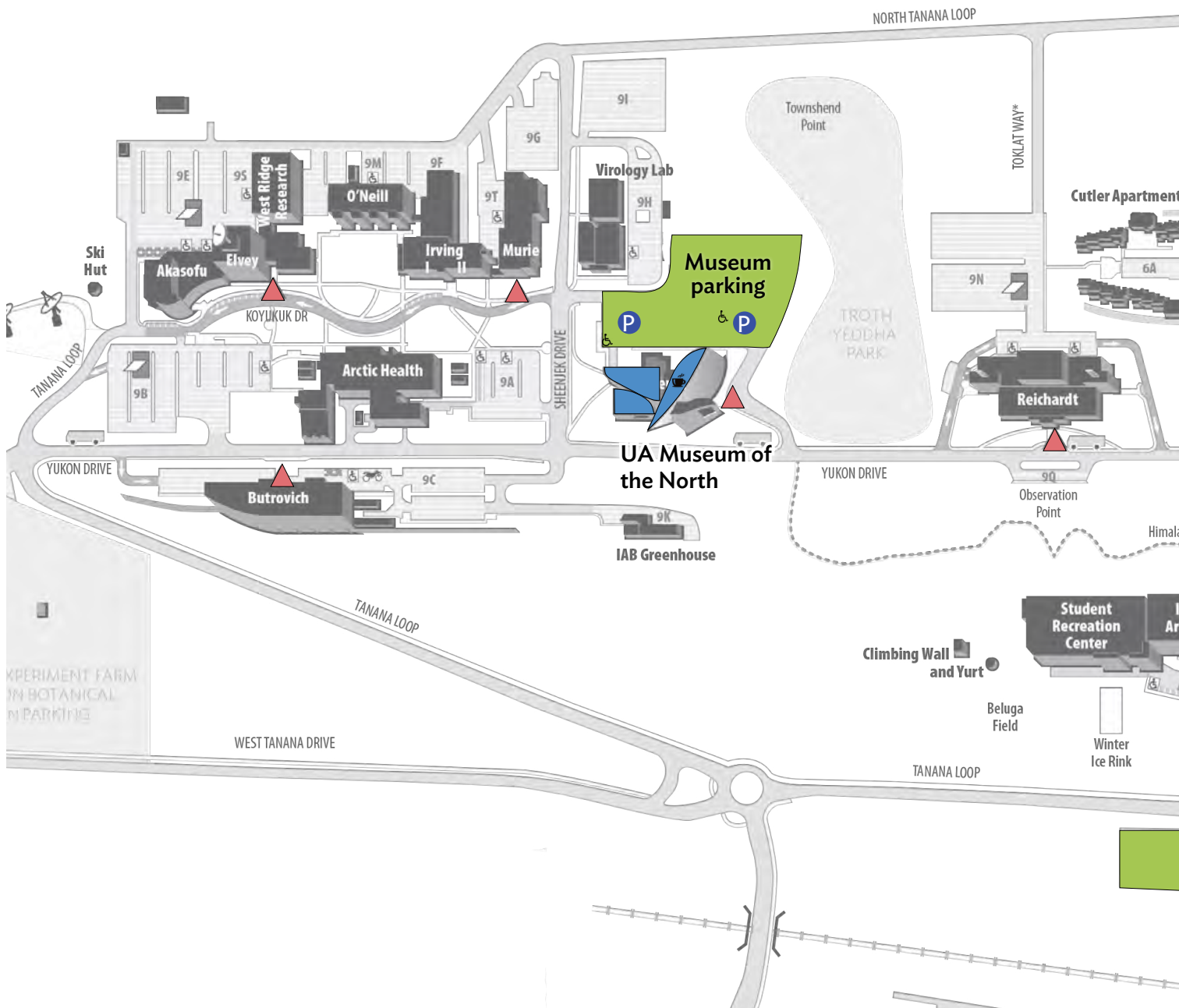
SpringHill Suites – Thursday, May 31		
Morning Departures		Arrival
SpringHill	---	UAF
7:20 a.m.	---	7:40 a.m.
Afternoon Departures		Arrival
Wood Center Transit Plaza	SpringHill	Airport
1:45 p.m.	2:25 p.m.	2:45 p.m.

Alaska Energy Systems Tour
Thursday, May 31
Wood Center Transit Plaza
1:45 p.m.

Evidence of Climate Change Tour
Thursday, May 31
Wood Center Transit Plaza
1:45 p.m.

Poker Flat Research Range Tour
Friday, June 1
Akasofu Building, lobby
10:00 a.m.

Fairbanks Campus

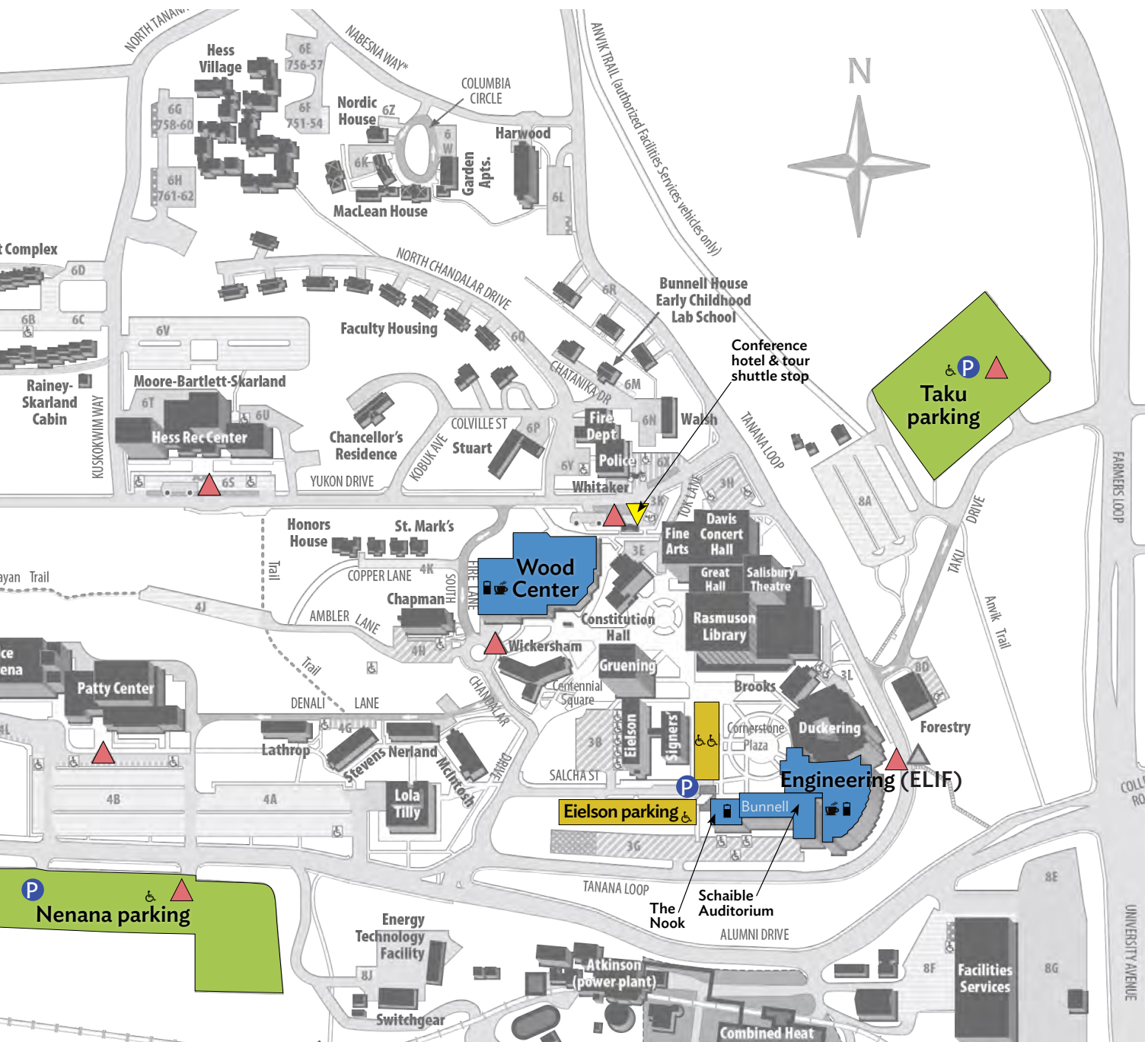


Key

-  Conference facilities
-  Charging station
-  Coffee available

Transportation

-  Conference hotel & tour shuttle stop
-  UAF campus shuttle stops



Parking

 Available parking

 Metered parking-
2 hour limit

 Parking permit kiosk

Disabled parking permits are available through the Alaska Division of Motor Vehicles. For temporary campus disabled permits contact UAF Parking Services and present medical documentation.

For up-to-date parking information visit www.uaf.edu/parking/ or call 474-7275.



America's Arctic University

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