

In-Flight Icing Users Technical Interchange Meeting (TIM)

Washington, DC
25-26 February 2015

Sponsor: National Center for Atmospheric Research
P.O. Box 3000
Boulder, CO 80307

Host Facility: UCAR Office Downtown Washington, DC
1201 New York Ave, NW
4th Floor
Washington, DC 20005

1. TIM OVERVIEW

1.2 TIM DESCRIPTION AND THEME

- The National Center for Atmospheric Research (NCAR) is sponsoring a workshop to discuss the safety and efficiency impacts of in-flight icing on the National Airspace System (NAS) and also internationally. The Federal Aviation Administration (FAA) is assisting in organizing the workshop. The goal of the workshop is to bring together diverse representatives from throughout the aviation industry in order to:
 - Promote a common understanding of the impacts of icing conditions on various elements of the NAS, such as air traffic management, airline flight operations, general aviation, and aviation weather forecasting;
 - Examine on-going research and development of icing mitigation capabilities; and
 - Explore possible government and industry cooperative efforts to address in-flight icing issues.
- Topics for presentation and discussion include:
 - User community perspectives (airlines, dispatchers, pilots, safety, international, weather forecasters);
 - Observing and reporting Icing conditions;
 - Icing forecasting; and
 - Future challenges (data access, new capabilities, probabilistic forecasting, building business cases, visions).

1.2 TIM CHAIR/CO-FACILITATOR

Chair: Dr. Marcia Politovich, NCAR
Email: marcia@ucar.edu

Co-Facilitator: Dino Rovito, FAA
Email: dino.rovito@faa.gov

1.3 TIM REGISTRATION

Registration may be accomplished by sending an email to Rhonda Moore (rhonda@ucar.edu) with your name, title, organization, email address, and phone number. Please include contact information on each participant that will be attending from your organization.

1.4 TIM ATTIRE

Business Casual is recommended for the workshop attendees.

1.5 TIM AGENDA

The preliminary agenda for the In-flight Icing Users TIM is given below.

In-Flight Icing Users TIM Draft Agenda

Day 1: Wednesday, February 25, 2015

Introduction, Opening Comments

Intro/Logistics – **Marcia Politovich**, NCAR (8:30-8:45 am)

Opening Talk: Expectations, Background, Goals -- **Dino Rovito**, FAA, (8:45-9:00 am)

Perspectives and Overviews

NTSB: Safety– **Don Eick**, Senior Meteorologist, NTSB (9:00–9:20 am)

FAA Icing Steering Committee - **Tom Bond**, FAA Chief Scientist for Icing (9:20-9:40 am)

General Aviation Users – **Paul Deres**, AOPA Air Safety Institute (9:40-10:00 am)

Thoughts on Icing from a Pilot – **John Hazlet**, RACCA (10:00-10:20 am)

Q&A Session (10:20-10:30 am)

BREAK (10:30-10:50 am)

Perspectives and Overviews (cont.)

NCEP/AWC: Current and future products – **Brian Pettegrew**, AWC (10:50-11:10 am)

Appendix O – **Roger Sultan**, FAA Flight Standards (11:10-11:30 am)

Q&A Session (11:30-11:45 am)

LUNCH (11:45 - 1:00 pm)

Related R&D Efforts

High Ice Water Content (HIWC) –update by **Tom Bond**, FAA (1:00-1:45 pm)

Current State of Aviation Weather Research Program and
other Research – **Marcia Politovich**, NCAR (1:45-2:15 pm)

Radar Detection of Icing – **David Serke**, NCAR (2:15-2:35 pm)

BREAK (2:40-3:00 pm)

Research Topics: Current Status, Future Plans

Model Development – **Brad Ferrier**, NCEP (3:00-3:20 pm)

Satellite Detection of Icing – **Pat Minnis and Bill Smith**, NASA LaRC (3:20-3:40 pm)

Onboard Icing Sensors – **Jamie Braid**, Panasonic Weather Services (3:40-4:10 pm)

Sensors and Programs for Inflight/Engine Icing - **Darrel Baumgardner**,
Droplet Measurement Technologies (4:10-4:30 pm)

Q&A and Recap -- **Steve Abelman**, FAA, moderator (4:30-4:45 pm)

Day 2: Thursday, February 26, 2015

Day 2 Overview – Marcia Politovich, NCAR; Dino Rovito, FAA, NextGen Aviation Weather Division

International Icing Products and Concerns

| | |
|--|------------------|
| UK Met Office – Cyril Morcrette , UK Met Office (remotely) | (8:40-9:00 am) |
| ADWICE Icing Tool - Frank Kalinka , DWD (Germany) | (9:00-9:20 am) |
| FAA International Activities – Steven Albersheim , FAA | (9:20-9:40 am) |
| NCEP International Activities – Matt Strahan or Brian Pettegrew , AWC | (9:40-10:00 am) |
| Q&A Session | (10:00-10:10 am) |

BREAK (10:10-10:30 am)

Specific User Needs

| | |
|---|------------------|
| A Pilot's Viewpoint– Steven Green , Flight Ops Research | (10:30-10:50 am) |
| An Airline Perspective – Rick Curtis , A4A Met Committee | (10:50-11:10 am) |
| Air Traffic Control/Traffic Management – Matt Tucker , FAA | (11:10-11:30 am) |
| Icing Weather Training – Scott Dennstaedt , Aviation Weather Workshops | (11:30-11:50 am) |
| Q&A Session | (11:50 am- Noon) |

LUNCH (Noon - 1:00 pm)

Terminal Area Icing Weather Information for NextGen (TAIWIN) update - **Jim Riley**, FAA (1:00-1:30 pm)

Panel Discussion on Forecasting – moderated by **Steve Abelman**, FAA (1:30-3:00 pm)
Representatives from research, forecast provider and user organizations discuss various aspects of icing forecasting from research, modeling, product generation, how forecasts are used, what is needed. The panel will also address issues, challenges, questions and comments from the two days of presentations.

Panel Participants: Tom Bond or Roger Sultan (FAA AVS), Marcia Politovich (NCAR), Rick Curtis (Southwest Airlines), NWS Representative, others

BREAK (3:00-3:20 pm)

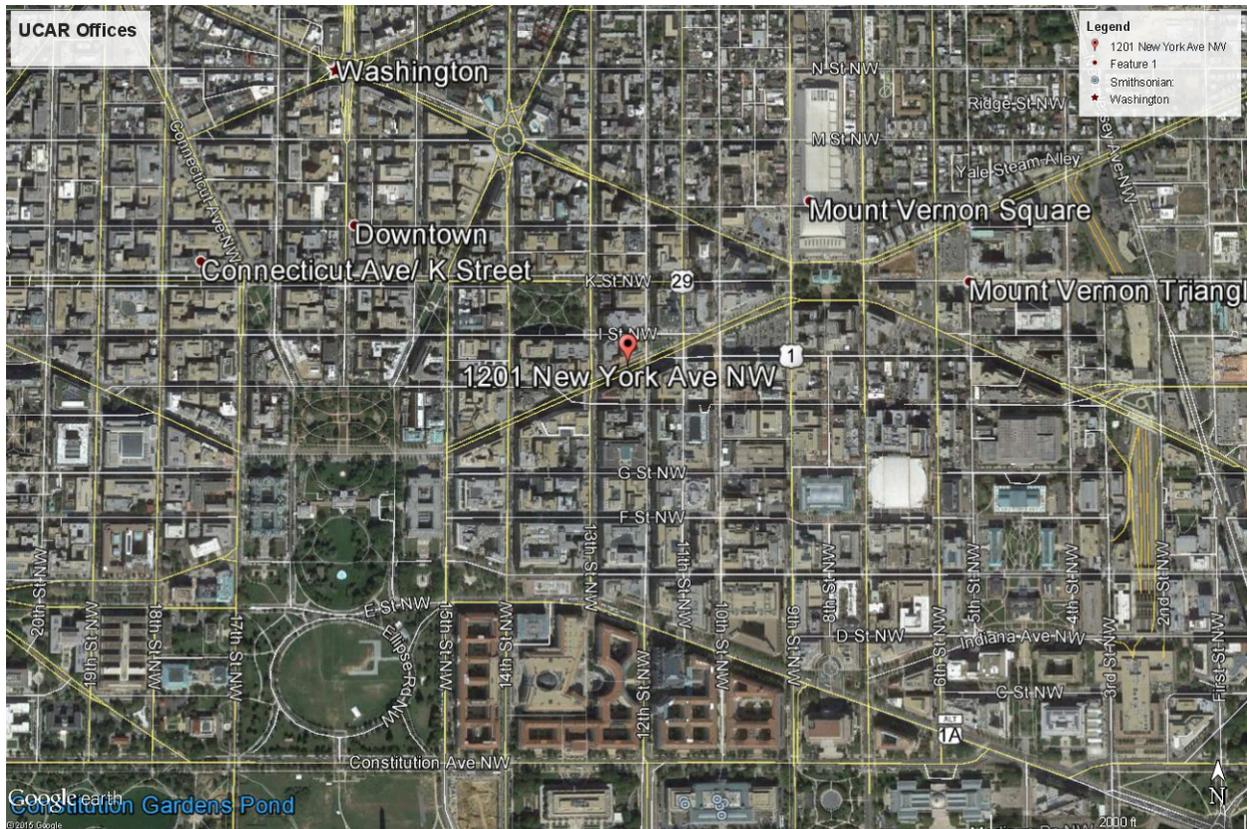
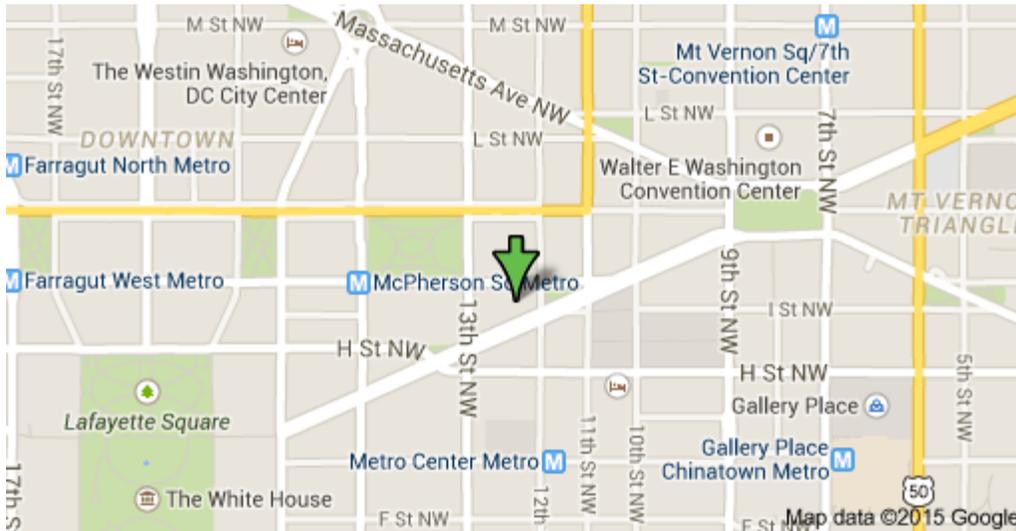
Open Discussion/Wrap Up: Steve Abelman, FAA, moderator (3:20-4:00 pm)

TIM LOCATION AND VENUE

1.6 VENUE MAP OVERVIEW

The venue for the Icing TIM is the University Center for Atmospheric Research (UCAR) Office Conference Center, located on the fourth floor of 1201 New York Avenue Northwest, Washington DC, 20005.

<https://www.google.com/maps/place/1201+New+York+Ave+NW,+Washington,+DC+20005/@38.90981,-77.028582,17z/data=!3m1!4b1!4m2!3m1!1s0x89b7b79410867543:0x7f26066883b852d2>





A METRO map and directions to 1201 New York Ave, NW, Washington, DC 20005 can be found at http://www.wmata.com/rail/maps/find_station.cfm#

Driving: From Arlington VA take GW Memorial Pkwy south or Curtis Memorial Pkwy east or Arlington Blvd east to Theodore Roosevelt Bridge into DC and take Constitutional Ave east for about 2 miles and turn left on 12th street and travel north 5 blocks crossing over New York Ave. The UCAR Office is the first building on your left on the north side of New York and 12th and on the corner. The address is 1201 New York Ave, NW, Washington DC 20005 (4th floor).

From BWI take 295 south over top of 495 beltway and travel 4 more miles south to New York west across Bladensburg Road, then Florida Ave, and then continue to and around Mount Vernon Square back on to New York for 3 more blocks to 12th Street. Turn right going north on 12th St and Office building is immediately located there on the NW corner (1st building on 12th on the left side).

From DULLES take Toll road to I66 east to Theodore Roosevelt Bridge to Constitutional Ave and go about 2 miles to 12th street and turn left and travel north for 5 blocks to New York Ave. Cross over New York on 12th heading north and on the corner to your left is the UCAR Office at 1201 New York Ave, NW, Washington DC 20005 (4th floor).

From Tysons Corner take I66 east or the same direction from there as from DULLES listed immediately above.

Public Transportation and Walking

Take **Silver**, **Orange**, **Blue** or **Red** metro lines to “**Metro Center Metro Station**” and come up to street level and walk 2 blocks north on 12th Street, NW DC, to New York Avenue. Cross over New York Ave and the UCAR Office building is on the corner (first building on your left). Total walk distance is ~ 1/5 mile.

If you take the **Silver**, **Orange** or **Blue** Lines to “**McPherson Square Metro Station**,” come up to street level at 14th street and walk 2 blocks east on “I” street, NW, DC to 12th street and turn right and walk one block south toward New York Avenue. The UCAR Office is on the corner of New York Ave on your right. Total walk distance ~1/4 mile.

For **Green** or **Yellow** lines transfer at either **L'Enfant Plaza Metro Station** and take **Silver**, **Orange** or **Blue** lines 3 station stops to Metro Center or transfer at **Gallery Place/Chinatown Metro Station** and transfer to **Red** line one stop to Metro Center. From there follow the directions in the 1st paragraph above.

Attractions and Landmarks

UCAR's Office is located near some of Washington D.C.'s most popular attractions and national landmarks.

- [Smithsonian Museums](#)
- [National Air and Space Museum](#)
- [Restaurants](#)
- [United States Post Office](#)
- [The National Mall](#)
- [The White House](#)
- Off-Street Public Parking

2. HOTEL ACCOMMODATIONS/TRAVEL INFORMATION

There are many good hotels in downtown Washington DC and along the Metro (subway) line and nearby Virginia. Many offer free airport shuttle, and if you fly into Washington Reagan National Airport, and stay near a Metro stop, you should not need a rental car. We have listed some of the hotels closest to UCAR Offices below and in neighboring Virginia. Also Pentagon City, Crystal City, and Old Town Alexandria in Virginia feature many restaurants and shopping opportunities.

Hotels near Metro Center and McPherson Square Metro Stations closest to UCAR Office

The Westin Washington, D.C. City Center

1400 M Street NW
Washington, DC 20005
202-429-1700

<http://www.starwoodhotels.com/westin/property/overview/index.html?propertyID=1761>

Washington Plaza Hotel

10 Thomas Circle, NW
Washington, DC 20005
202-842-1300

http://www.washingtonplazahotel.com/specials-and-packages/?src=mecomm_digitalmedia_businessbasic

Embassy Suites, Washington D.C. – Convention Center

900 10th Street, NW
Washington, DC 20001
202-739-2001

<http://embassysuites3.hilton.com/en/hotels/district-of-columbia/embassy-suites-washington-dc-convention-center-WASCCES/index.html>

Washington Marriott at Metro Center

775 12th St, NW
Washington, DC 20005
202-737-2200

<http://www.marriott.com/hotels/travel/wasmc-washington-marriott-at-metro-center/>

Courtyard by Marriott Washington Convention Center

900 F Street, NW
Washington, DC 20004

<http://www.marriott.com/hotels/travel/wascn-courtyard-washington-convention-center/>

Grand Hyatt Washington

1000 H Street, NW
Washington, DC 20001
202-582-1234

<http://grandwashington.hyatt.com/en/hotel/home.html>

Hilton Garden Inn Washington DC Downtown

815 14th St, NW
Washington, DC 20005
202-682-8637

<http://hiltongardeninn3.hilton.com/en/hotels/district-of-columbia/hilton-garden-inn-washington-dc-downtown-DCACHGI/index.html>

Renaissance Washington DC Downtown

999 Ninth St, NW
Washington, DC 20001
202-898-9000

<http://www.marriott.com/hotels/travel/wasrb-renaissance-washington-dc-downtown-hotel>

Residence Inn Washington, DC Downtown

1199 Vermont Ave, NW
Washington, DC 20005
202-898-1100

<http://www.marriott.com/hotels/maps/travel/wasdc-residence-inn-washington-dc-downtown/>

Hotels near L'Enfant Plaza Metro Station**Mandarin Oriental**

1330 Maryland Ave SW
Washington, DC 20024
202-554-8588

www.Mandarinoriental.com/Washington/

Holiday Inn Washington-Capital

550 C St SW
Washington, DC 20024
202-479-4000

<http://www.ihg.com/holidayinn/hotels/us/en/washington/wassm/hoteldetail>

Hotels near Pentagon City (Virginia) Metro Stop (Yellow Line)**The Ritz Carlton Pentagon City**

1250 South Hayes St
Arlington, VA 22202
703-415-5000

<http://www.ritzcarlton.com/en/Properties/PentagonCity/Default.htm>

Residence Inn Arlington Pentagon City

550 Army Navy Drive
Arlington, VA 22202

<http://www.marriott.com/hotels/travel/waspt-residence-inn-arlington-pentagon-city/>

Double Tree by Hilton Hotel Washington

300 Army Navy Drive
Arlington, VA 22202
703-416-4100

<http://doubletree3.hilton.com/en/hotels/virginia/doubletree-by-hilton-hotel-washington-dc-crystal-city-DCAAEDT/index.html>

Hotels near Crystal City (Virginia) Metro Stop (Yellow Line)

Crystal Gateway Marriott

1700 Jefferson Davis Highway
Arlington, VA 22202
703-920-3230

<http://www.marriott.com/hotels/travel/wasgw-crystal-gateway-marriott/>

Crystal City Marriott at Reagan National Airport

1999 Jefferson Davis Highway
Arlington, VA 22202
703-413-5500

<http://www.marriott.com/hotels/travel/wascc-crystal-city-marriott-at-reagan-national-airport/>

Crown Plaza Hotel Washington National Airport

1480 Crystal Drive
Arlington, VA 22202
703-416-1600

<http://www.crowneplaza.com/hotels/us/en/arlinton/wasna/hoteldetail>

Embassy Suites Crystal City – National Airport

1300 Jefferson Davis Highway
Arlington, VA 22202
703-979-9799

<http://embassysuites3.hilton.com/en/hotels/virginia/embassy-suites-crystal-city-national-airport-WASCRES/index.html>

Hampton Inn and Suites Reagan National Airport

2000 Jefferson Davis Highway
Arlington, VA 22202
703-418-8181

<http://www.hamptoninncc.com/>

Radisson Hotel Reagan National Airport

2020 Jefferson Davis Highway
Arlington, VA 22202
703-920-8600

<http://www.radisson.com/arlinton-hotel-va-22202/vaarling>

Hotels near King Street (Alexandria, Virginia) Metro Stop (Yellow Line in opposite direction from Reagan National Airport)**Hilton Alexandria Old Town**

1767 King Street
Alexandria, VA 22314
703-837-0440

<http://www3.hilton.com/en/hotels/virginia/hilton-alexandria-old-town-DCAOTHF/index.html>

Embassy Suites Alexandria – Old Town

1900 Diagonal Rd
Alexandria VA 22314
703-684-5900

<http://embassysuites3.hilton.com/en/hotels/virginia/embassy-suites-alexandria-old-town-WASOTES/index.html>

Hampton Inn Alexandria-Old Town

1616 King Street
Alexandria, VA 22314
703-299-9900

<http://hamptoninn3.hilton.com/en/hotels/virginia/hampton-inn-alexandria-old-town-king-st-metro-WASALHX/index.html>

Residence Inn Alexandria Old Town South at Carlyle

2345 Mill Road

Alexandria, Virginia 22314

703-549-1155

<http://www.marriott.com/hotels/travel/wasra-residence-inn-alexandria-old-town-south-at-carlyle/?vsremarsha=NM-N&vsresect=0&vsretype=CNF&vsrebrand=RI&vsrelink=ViewHotelWebsite>

Residence Inn Alexandria Old Town/Duke Street

1456 Duke Street

Alexandria, VA 22314

703-548-5474

<http://www.marriott.com/hotels/travel/wasdk-residence-inn-alexandria-old-town-duke-street>

The Westin Alexandria

400 Courthouse Square

Alexandria, VA 22314

703-253-8600

<http://www.westinalexandria.com/>

Wyndham Old Town Alexandria

1757 King Street

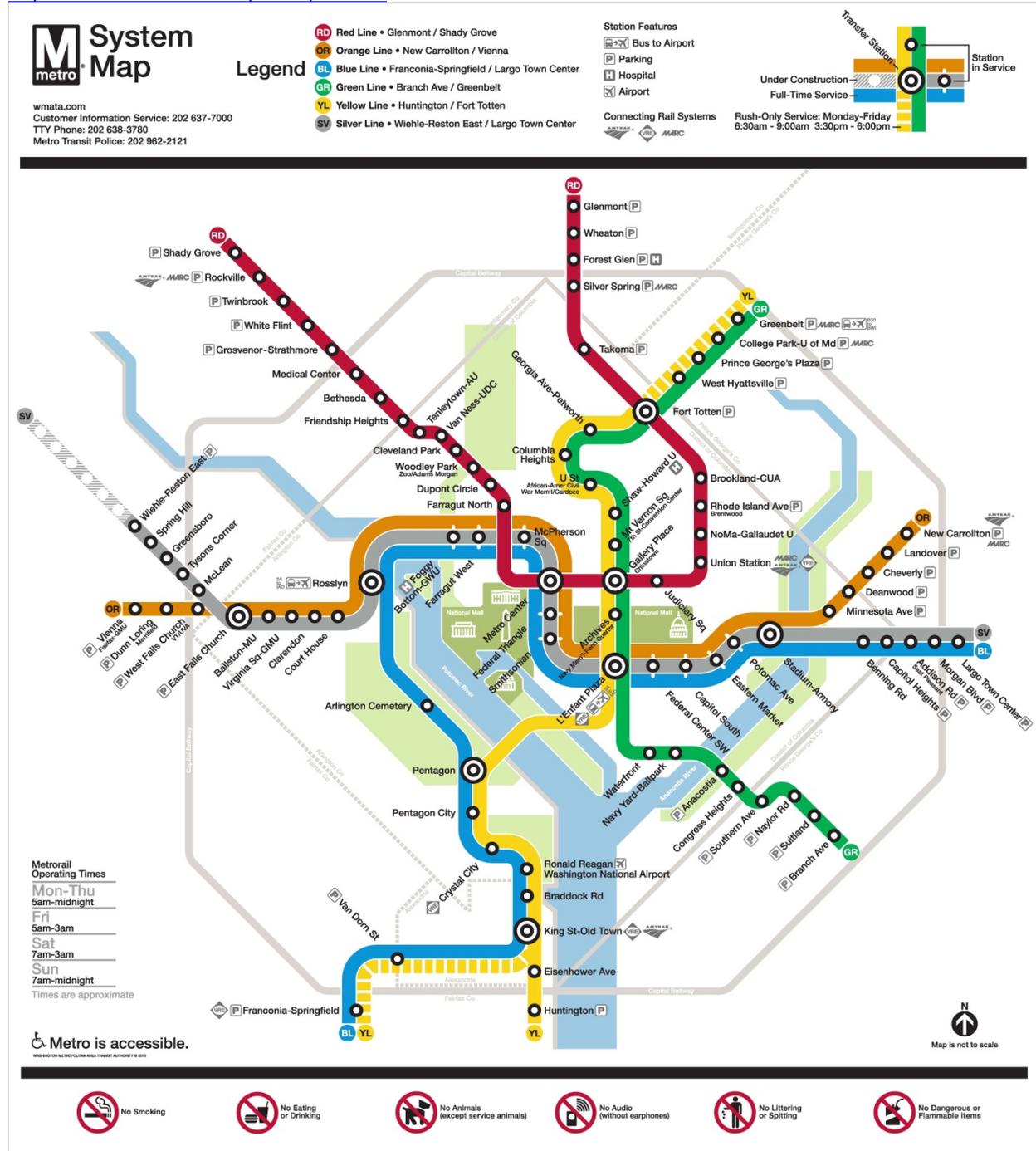
Alexandria, VA 22314

800-428-1932

<http://www.extraholidays.com/washington-dc/wyndham-old-town-alexandria.aspx>

2.1 WASHINGTON DC METRO (SUBWAY) MAP

<http://wmata.com/rail/maps/map.cfm?a>



3. WASHINGTON DC AREA AIRPORTS

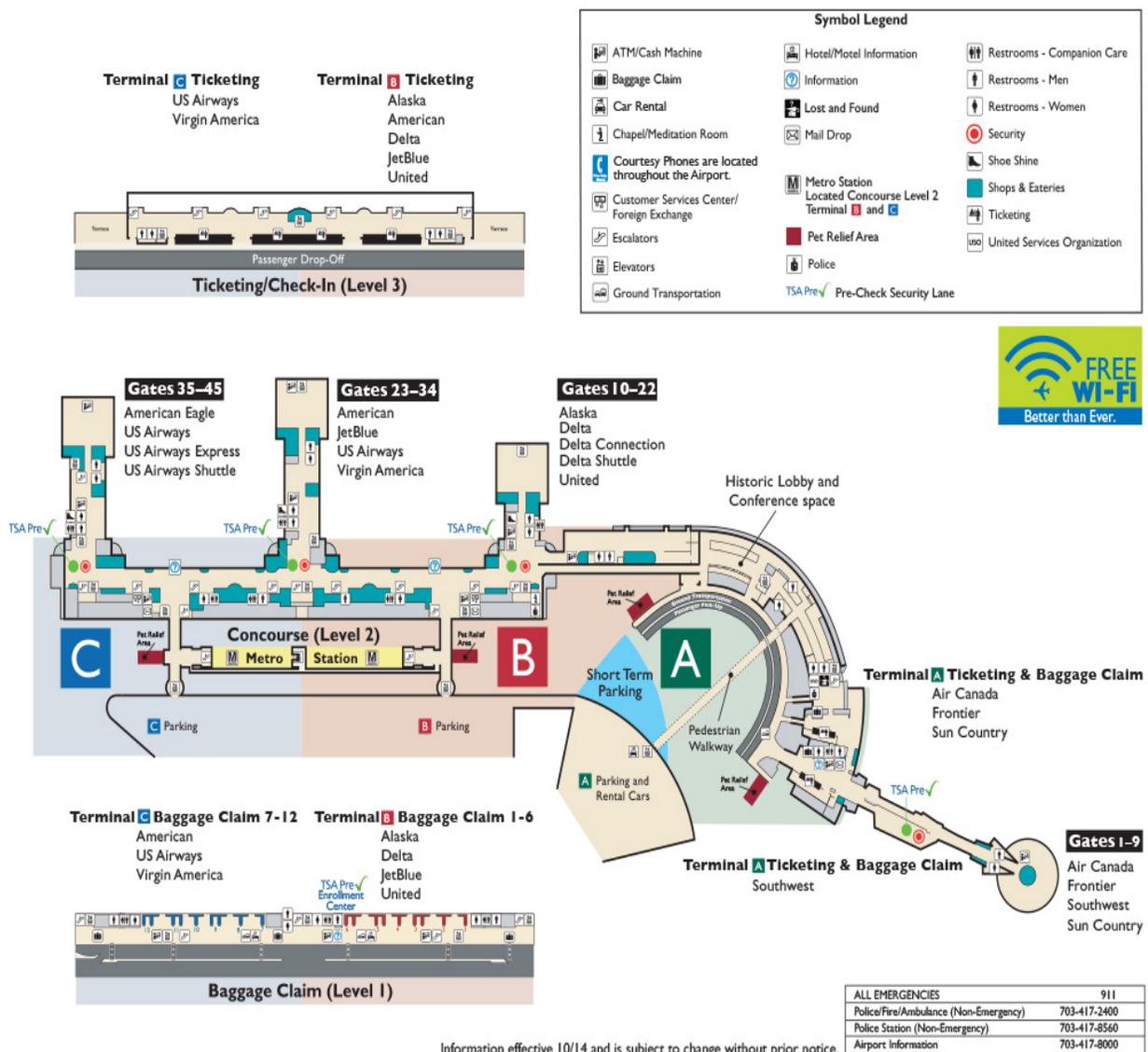
3.1 RONALD REAGAN WASHINGTON NATIONAL AIRPORT

Ronald Reagan Washington National Airport (DCA) is located in Arlington, VA just across the Potomac River from the Nation's Capital. Built in 1941, the airport's original Terminal, now called Terminal A, is on the National Register of Historic Places. In 1987, the Metropolitan Washington Airports Authority was formed to operate Washington National and Dulles International Airports which were built and owned by the federal government. In 1997, Terminal B/C, designed by Cesar Pelli, was opened with a new roadway and parking garages. The airport features an unequalled view of Washington D.C. and key monuments and quality shopping and dining establishments located before and after security. Reagan National is directly linked to the region's Metrorail system which is adjacent to Terminal B/C.

<http://www.metwashairports.com/reagan/reagan.htm>

DCA GROUND TRANSPORTATION

<http://www.metwashairports.com/reagan/1179.htm>



3.2 WASHINGTON DULLES INTERNATIONAL AIRPORT



Washington Dulles International Airport (IAD) is located in Chantilly, VA on 12,000 acres of land 26 miles from downtown Washington, DC. The Main Terminal opened in 1962 and was designed by architect Eero Saarinen. Dulles is a major hub for domestic and international air travel with a mixture of legacy and low

fare carriers that provide air service throughout the world. Flights operate from midfield concourses A, B, C and D and from Z-gates connected to the Main Terminal. The Airport has invested in its infrastructure through a major construction program called D2, Dulles Development, which included two parking garages, a new airport traffic control tower, expanded B-gates, a new fourth runway, an automated people mover system called AeroTrain and an expanded International Arrivals Building. The airport is connected to the region's highway system via an Authority-operated, 16-mile Airport Access Highway dedicated to airport users. A 23-mile expansion of the region's Metrorail system is planned to reach Dulles in 2018.

<http://www.metwashairports.com/dulles/dulles.htm>

IAD GROUND TRANSPORTATION

<http://www.metwashairports.com/dulles/793.htm>

MAP OF DULLES AIRPORT

http://www.metwashairports.com/file/iad_terminal_map.pdf

Terminal/Hourly Parking

Valot Parking

Garages 1 & 2

Economy Parking

Cell Phone Waiting Area

Parking Entrance Routes

Parking Exit Routes

Covered Pedestrian Bridge to Main Terminal
(accessible from the Ticketing level connecting to the 3rd Level of Garage 2)

Enclosed Walkway with Moving Sidewalks to Main Terminal
(accessible from Lower Level of Garage 1)

Terminal

Concourse C, Concourse D, Concourse A, Concourse B

Terminal, International Arrivals Building, Garage 1, Garage 2, Aviation Drive, Annapolis Drive, Rudder Road

Cell Phone Waiting Area

Terminal/Hourly Parking Lot, Valot, Terminal/Hourly Parking Lot, Garage 1, Garage 2, Aviation Drive, Annapolis Drive, Rudder Road

Terminal/Hourly Parking Lot, Valot, Terminal/Hourly Parking Lot, Garage 1, Garage 2, Aviation Drive, Annapolis Drive, Rudder Road

Terminal/Hourly Parking Lot, Valot, Terminal/Hourly Parking Lot, Garage 1, Garage 2, Aviation Drive, Annapolis Drive, Rudder Road

AIRLINE TICKET COUNTERS

- 1 Aeroflot
- 1 AeroMexico
- 1 Air China
- 2 Air France
- 3 ANA
- 2 American Airlines
- 3 Austrian Airlines
- 3 Avianca
- 1 British Airways
- 2 Brussels Airlines
- 1 Copa
- 2 Delta
- 2 Emirates
- 1 Ethiopian
- 1 Etihad Airways
- 3 Frontier Airlines
- 3 Icelandair
- 3 JetBlue
- 2 KLM
- 2 Korean Air
- 3 Lufthansa
- 3 Porter
- 2 Qatar Airways
- 2 Saudia
- 3 SAS
- 3 South African
- 1 Southwest
- 3 Sun Air / Pacific Wings
- 3 Turkish Airlines
- 2 United/United Express
- 2 US Airways/Express
- 1 Virgin America
- 2 Virgin Atlantic

Level Indicator

AeroTrain Map
(serves Main Terminal and airline gates)

| | |
|--|---------------------|
| ALL EMERGENCIES | 911 |
| Police/Fire/Ambulance (Non-Emergency) | 703-572-2400 |
| Police Station (Non-Emergency) | 703-572-2950 |
| Airport Information | 703-572-2700 |

Better than Ever.

TERMINAL

DEPARTURES/TICKETING LEVEL

- Currency Exchange
- Elevators
- Escalators
- Food/Beverage
- Gift Shop
- Telephones
- Ticketing
- TSA Pre[®] Enrollment Center
- Pet Relief Area
- Restroom Facilities

SECURITY CHECKPOINT LEVEL

- Elevators
- Escalators
- Restroom Facilities
- Security Checkpoint

AEROTRAIN LEVEL TO ALL GATES

- AeroTrain Platform
- Elevators

ARRIVALS/BAGGAGE CLAIM LEVEL

- ATM/Cash Machine
- Baggage Claim Carousels
- Elevators
- Escalators
- Food/Beverage
- Gift Shop
- Information Counter
- Lost and Found
- Moving Walkway
- Restroom Facilities
- Telephones
- USO Lounge
- Washington Flyer Silver Line Express

GROUND TRANSPORTATION LEVEL

- Car Rental
- Elevators
- Pet Relief Area
- Telephones
- Hotel Information
- Taxi/Shared Van
- Parking

Air & Space Museum Shuttle Bus - Curb 2E
 Hotel Pick-Up - Door 2, Curb 2A or Door 6, Curb 2H
 Garage 1 & 2/Economy Parking Shuttles
 Metrolink Route SA - Door 4, Curb 2E
 Washington Flyer Silver Line Express service to/from Wiehle-Reston East Metro Station - Door 4, Curb 2E
 Rental Car Shuttle - Door 4, Curb 2E

DEPARTURES/TICKETING LEVEL

SECURITY CHECKPOINT LEVEL

AEROTRAIN LEVEL TO ALL GATES

ARRIVALS/BAGGAGE CLAIM LEVEL

GROUND TRANSPORTATION LEVEL

TO ALL GATES, TSA Pre[®] Enrollment Center, Security Checkpoint, AeroTrain Platform, Baggage Claim, Restroom Facilities, Telephones, Escalators, Elevators, Food/Beverage, Gift Shop, Information Counter, Lost and Found, Moving Walkway, Restroom Facilities, Telephones, USO Lounge, Washington Flyer Silver Line Express, Car Rental, Hotel Information, Taxi/Shared Van, Parking, Pet Relief Area, International Arrivals Building, Ground Transportation, Response Claim, Door 2, Door 4, Door 6, Door 8, Door 10, Door 12, Door 14, Door 16, Door 18, Door 20, Door 22, Door 24, Door 26, Door 28, Door 30, Door 32, Door 34, Door 36, Door 38, Door 40, Door 42, Door 44, Door 46, Door 48, Door 50, Door 52, Door 54, Door 56, Door 58, Door 60, Door 62, Door 64, Door 66, Door 68, Door 70, Door 72, Door 74, Door 76, Door 78, Door 80, Door 82, Door 84, Door 86, Door 88, Door 90, Door 92, Door 94, Door 96, Door 98, Door 100

SILVER LINE EXPRESS
Washington Flyer, Inc.

Information effective 09/2014 and is subject to change without prior notice.

3.3 BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT

Baltimore/Washington International Thurgood Marshall Airport (BWI)

- BWI Marshall Airport set a third straight annual passenger record in 2012. About 22.68 million passengers flew through BWI Marshall in 2012, a 1.3 percent increase over 2011 and a new all-time annual record.
- Two new airlines started service at BWI Marshall in 2012. In July, Condor Airlines started twice-weekly season service between BWI Marshall and Frankfurt, Germany. Frankfurt is a major international destination and an important European hub market. In September, Spirit Airlines began service to Fort Lauderdale and Dallas / Fort Worth.
- BWI Marshall installed a 505 kW solar photovoltaic system on the top level of the Daily Garage. The system was designed to produce over 600,000 kilowatt hours of electricity each year. The BWI Marshall solar project is one measure in a broad energy efficiency program for the Airport.
- In the summer of 2012, construction started on a major terminal enhancement program at BWI Marshall. The work will improve and modernize the passenger terminal and provide new services for travelers. The construction includes: a new, expanded security checkpoint; a secure connector between Concourses B and C with moving sidewalks and other passenger amenities; and an improved Concourse C facility with enhanced airline gate hold rooms and new food and retail space.
- BWI Marshall introduced a complimentary wireless internet option for travelers.
- The Airport continued its comprehensive, multi-year program to rehabilitate and improve runways and airfield pavement. The 2012 work focused primarily on Runway 10-28.



www.bwiairport.com

BWI GROUND TRANSPORTATION

<http://www.bwiairport.com/en/travel/ground-transportation>

MAP OF BWI AIRPORT - UPPER LEVEL

http://www.bwiairport.com/files/pdfs/bwi_maps/UL010715.pdf



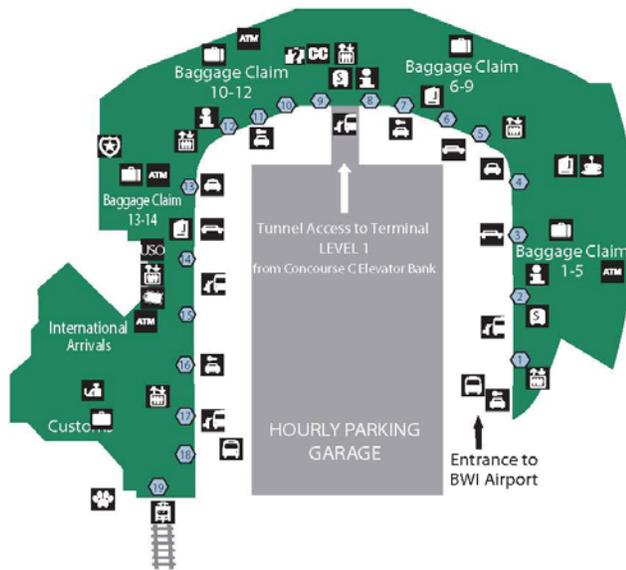
Upper Level Terminal Map



MAP OF BWI AIRPORT - LOWER LEVEL

http://www.bwiairport.com/files/pdfs/bwi_maps/LL091114.pdf

Lower Level Terminal Map



| SERVICES | |
|-----------------------|----------------------------------|
| | Automatic Teller Machine |
| | Baggage Claim |
| | Best Buy Express by Zoom Systems |
| | Career Center |
| | Customs and Border Protection |
| | Elevator |
| | Euro Café |
| | Hudson News |
| | Information |
| | Pet Relief Area |
| | Police |
| | TSA Lost and Found |
| | United Service Organizations |
| | Door to roadway |
| GROUND TRANSPORTATION | |
| | Light Rail |
| | Limousine |
| | Parking Shuttle/Amtrak-MARC |
| | Public Transit Regional Bus/MTA |
| | SuperShuttle and Airport Shuttle |
| | Taxi Stand |
| | Car Rental Shuttle |