3 PURPOSE AND NEED

The CEQ regulations implementing NEPA require that EAs include a “brief discussion of the need for a proposal.” FAA Order 1050.1E expands on this requirement, stating that an EA must include a discussion that “identifies the problem facing the proponent (that is, the need for an action), the purpose of the action (that is, the proposed solution to the problem), and the proposed timeframe for implementing the action.” Each of these items, as it relates to the Greener Skies over Seattle project, is discussed below.

3.1 Need

The FAA’s mission is “to provide the safest, most efficient aerospace system in the world.” The “need” faced in the complex airspace surrounding SEA is the lack of efficiency associated with existing standard instrument arrival procedures into SEA, both in terms of the throughput of traffic to the runways as well as the significant need for controller interaction to maintain safe separation standards between aircraft arriving on closely-spaced parallel runways. The instrument procedures and related airspace management tools and structure that still depend on the U.S.’s ground-based air traffic management system date back to early days of World War II and do not provide the flexibility and predictability that current space-based technologies can offer.

The Greener Skies project that is addressed in this FEA consists of proposed measures including the addition of new RNAV, RNP, RNP-to-ILS, and OPD arrival procedures into SEA. They comprise the Proposed Action in this document. The procedures, if implemented, would increase efficiency with which the aircraft are controlled and reduce fuel burn thereby reducing carbon emissions. Specific problems that the Proposed Action is intended to address are:

- Inefficiency due to a complex airspace structure
  - During periods of high traffic demand, the separation between arrival and departure flight routes is not sufficient for the airspace to be used without controllers carefully observing aircraft activity along the proximate or crossing flight routes and actively managing aircraft to maintain safe separations. These areas are referred to as “confliction points” in ATC phraseology and require controller intervention.

- Limited flight path predictability and flexibility
  - Where arrival and/or departure flight routes intersect, air traffic controllers may require flight level-offs for either arrivals or departures to ensure adequate vertical separation between aircraft
  - Similar conflictions may require air traffic controllers to issue vector headings to arriving and/or departing aircraft on nearby flight routes so as to turn aircraft away from each other and give greater lateral separation
  - When neighboring airspace sectors are controlling aircraft headed for confliction points, ATC must communicate not only with individual pilots but also must coordinate with other controllers responsible for the neighboring airspace sector regarding the proximity of nearby aircraft (“point-outs”).

15 40 Code of Federal Regulations (CFR), Part 1500.
16 FAA Order 1050.1E, para. 405c.
17 FAA web site: http://www.faa.gov/about/mission/
• *Increased communications between controllers and pilots, which lead to increased workload and hear-back/read-back errors*
  
  ▪ All of these actions necessitate multiple verbal communications among controllers or between controllers and pilots, increasing workload, the possibility of missed communications, and the complexity of the entire airspace surrounding SEA.

• *Increased flight track length which leads to more fuel burn*
  
  ▪ Vectoring and level-offs interrupt the normal flow of operations and reduce the efficiency of the airspace and the movement of aircraft within it. The longer flight routes caused by vectoring and the interrupted climbs and descents add distance and time that lead to additional fuel burn, which, in turn, result in higher emissions of hydrocarbons and greenhouse gasses.

### 3.2 Purpose

The “purpose” of Greener Skies is therefore to provide a partial solution to the inefficiencies of the existing air traffic control system. Greener Skies seeks to achieve this purpose by leveraging existing NextGen performance-based technology enhancements to reduce controller and pilot workloads, reduce the complexity of operations within the Seattle airspace, and increase system flexibility and predictability. Through Greener Skies, FAA intends to:

• Implement standard instrument arrival procedures to improve the predictability and repeatability of flight routes and more efficiently serve SEA’s three runways and

• Redesign the supporting airspace management structure to enable the efficient use of optimized standard instrument procedures.

Consistent with the FAA’s responsibility for safe and efficient operation of the NAS, the Proposed Action is expected to address the need by having the following purpose:

• *Improve efficiency in a complex airspace while maintaining and enhancing safety through:*
  
  ▪ More efficient lateral and vertical flight profiles that reduce the need for level-offs during descent to land, also reducing energy consumption, engine emissions, and noise.

  ▪ Increased options for arrival paths, which will remove bottlenecks for aircraft approaching SEA from the northwest and southwest during busy times of day.

  ▪ Reduced frequency of long downwind legs and extended final approaches that require extra flying miles.

• *Increase flight path predictability and flexibility by:*
  
  ▪ Utilizing the increased precision of the procedures to land under Instrument Meteorological Conditions (IMC) on runways that normally cannot accommodate traffic during more adverse weather.

  ▪ Allowing aircraft to use flight paths under IMC weather conditions that are similar to the shorter paths used in Visual Meteorological Conditions (VMC).
• Decrease communication requirements between controllers and pilots, thereby reducing radio frequency congestion and the likelihood of hear-back/read-back errors. For example:
  ▪ Proposed new RNAV/RNP arrival routes and RNP/RVFP approaches will permit ATC to issue simpler instruction (“Descend via [name of STAR] after [name of IF/IAF] Cleared for [name of approach]”) and let the aircraft’s Flight Management System (FMS) fly the preprogrammed route, which includes vertical and lateral track information all the way to the landing runway. Current procedures require ATC to issue multiple altitude, speed, or heading instructions, each of which must also be read back by the pilot for confirmation.

• Create efficiencies by providing more direct routings that are not dependent on ground-based navigational aids:
  ▪ Implement more direct flight paths that will reduce flight times and have the added benefit of reducing fuel consumption and engine emissions.
  ▪ Make it easier for the FAA to accommodate the forecast growth in operations, which at SEA, are projected to increase 30.7 percent between 2012 and 2023. The increase represents a growth in demand for air travel to and from the Seattle area and is unrelated to whether the Proposed Action is ever implemented.