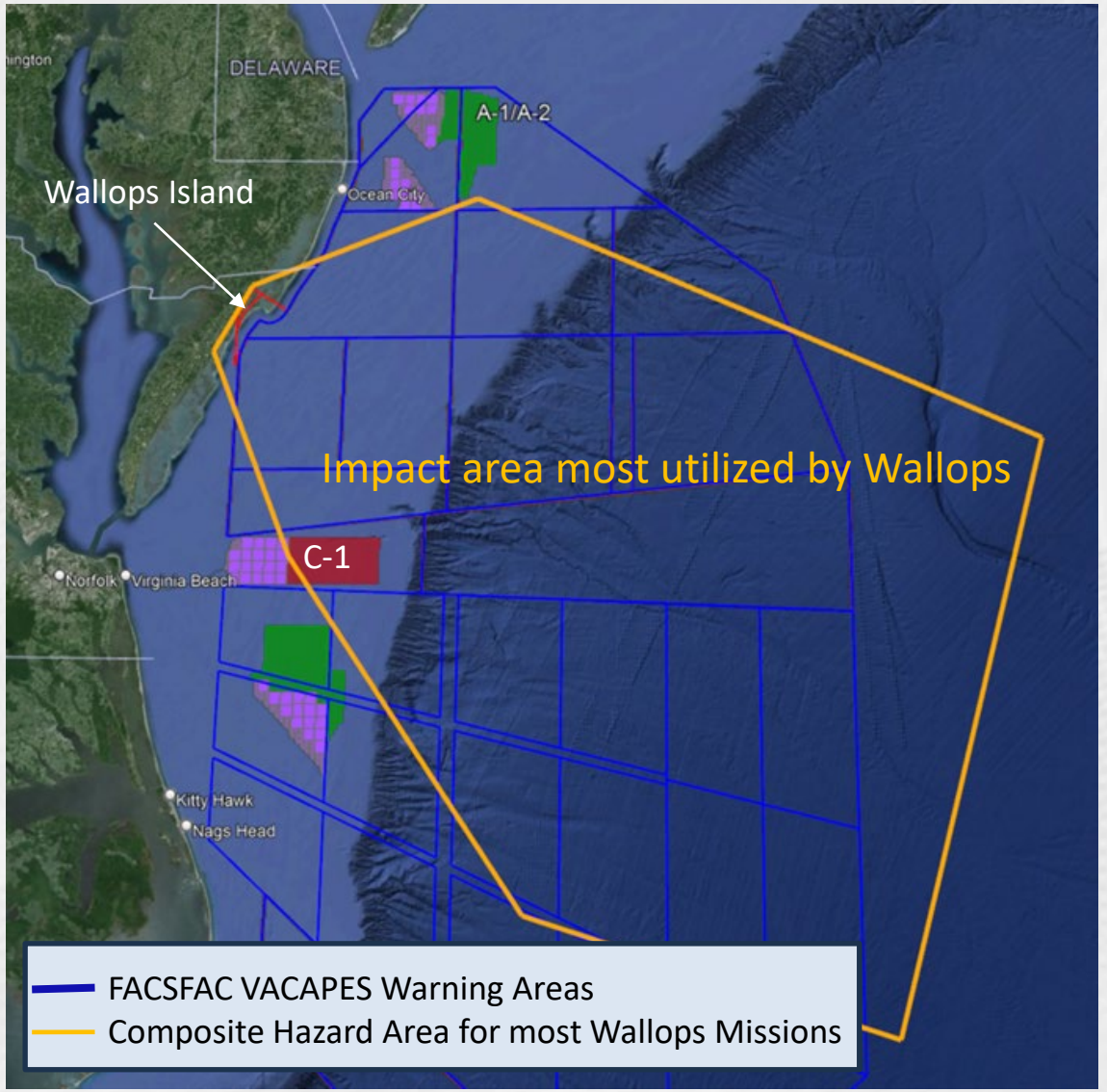
Industry Comment/NASA Response

"The wind industry is requesting clarification on the type and frequency of NASA and other navigational activities expected to impact the lease area, the affected portions of the lease area, and the circumstances necessitating suspension of operations and/or evacuation."

NASA Response: Thank you for your comment. NASA is working very closely with BOEM in providing feedback on proposed wind energy areas in the central Atlantic to ensure any potential development can co-exist with our range operations. NASA's launch forecast over the next 10 years is projected to increase to an average of one launch per week and approximately 50 launches per year. The portion of the lease area impacted is shown in the following chart, which also shows the overall area of most frequent use for NASA's launch range operations. Mitigations and considerations are discussed in slide three and include, but are not limited to, implementing hold-harmless agreements, technology considerations to reduce impacts to safety surveillance activities, and coordination of personnel working in the hazard area.

Launch Frequency and Hazard Area

- NASA's launch forecast over the next 10 years is projected to increase to an average of one launch per week and approximately 50 launches per year
- Wallops conducts launch and flight operations over a wide-range of azimuths from Wallops Island for launch vehicles that fly from low elevations just above the sea surface to suborbital missions and launches up to low-Earth orbit
- Windfarms could present an obstruction to the flight of low-elevation vehicles; in addition, they may be subject to planned impacts and debris from suborbital and orbital launch vehicles



Considerations and Mitigations

- **Ensuring public safety during launch operations is the primary mandate of all U.S. launch ranges, including Wallops – proposed C-1 windfarms are within Wallops' hazard areas**
- Wallops ensures public safety by conducting a rigorous flight safety analysis for every mission; the presence of either moveable or fixed assets – such as windfarms, ships, aircraft – in the launch range hazard area increases risks that need to be mitigated
- In addition, flight safety analysis requires inclusion of all downrange populations including people working on wind farms
- Coordination of personnel at wind farms would be required for population modeling as inputs to safety risk assessments
- Adjustment of wind farm populations and/or sheltering is an option
- Coordination with commercial launch providers on risk assessments will be essential for FAA review of launch license applications
- Developer may be asked to provide surveillance systems at wind farm and/or support modifications to airborne surveillance radar systems to ensure area clearance for safety
- Enact hold-harmless agreements for risk to wind turbines and NASA missions