

**Fiscal Note**

**Agency: NC Department of Labor**

**NCDOL Division:** Elevator and Amusement Device Bureau

**CHAPTER 15 - ELEVATOR AND AMUSEMENT DEVICE DIVISION (“EAD”)**

**New Rule Citation No.** Proposed 13 NCAC 15.0208

**Rule Topic:**

Safety Standards for Wind Turbine Tower Elevators.

This rule adopts the A17.8-2016 - American Society of Mechanical Engineers, which is the current standard for design, construction, installation, alternation, repair, replacement, inspection, maintenance and operation of all wind turbine elevators. The proposed rule is in response to the installation of 104 wind turbines in the eastern part of North Carolina, known as the Amazon Wind Farm.

**Staff Contact:**

**Jill F. Cramer**

General Counsel, NC Department of Labor, 919-733-0844 (Rulemaking Coordinator)

[Jill.Cramer@labor.nc.gov](mailto:Jill.Cramer@labor.nc.gov)

**Tom Chambers**

Bureau Chief, NCDOL, Elevator and Amusement Device Bureau, 919-807-2781

[Tom.Chambers@labor.nc.gov](mailto:Tom.Chambers@labor.nc.gov)

**Impact Summary:**

State government: Yes

Local government: No

Private entities: Yes (but limited in scope and number)

Substantial Impact: No

Federal government: No

**Necessity:** Safety Standards that are the basis for inspection of specialty wind turbine elevators. This proposed rule incorporates the current national safety standards, an any subsequent amendments and additions, into the current elevator rules for NCDOL inspectors to assign proper minimum standards for design, construction, installation, alternation, repair, replacement, inspection, maintenance and

operation of all wind turbine elevators. National safety standards assist inspectors to identify best practices of non-standard turbine elevators.

## 1. Background

Article 14A of Chapter 95 of the NC General Statutes, known as the Elevator Safety Act of North Carolina, finds that “unsafe and defective lifting devices imposes a substantial probability of serious and preventable injury to employees and the public exposed to unsafe conditions and that prevention of these injuries and protection of employees and the public from unsafe conditions is in the best interests and welfare of the people of the State.”

§ 95-110.2 governs the “design, construction, installation, plans review, testing, inspection, certification, operation, use, maintenance, alteration, relocation and investigation of accidents involving” various types of lifts including, but not limited to, elevators and service lifts. Turbine service lifts are those lifts found in wind turbines.

In early February of 2017, North Carolina’s first wind farm began operation. The Amazon Wind Farm currently has 104 wind turbines over 22,000 acres in Pasquotank and Perquimans counties. The wind turbines reach approximately 500 feet in height. This project was originally known as the Desert Wind Energy Project.

The permitting of wind energy facilities is regulated under Chapter 143, Article 21C of the NC General Statutes. Currently, there is a moratorium on wind energy facilities in North Carolina. See HB 589, <https://www.ncleg.net/Sessions/2017/Bills/House/PDF/H589v6.pdf>, quoted in part below:

Moratorium Established. – There is hereby established a moratorium on the issuance of permits for wind energy facilities and wind energy facility expansions in this State. The purpose of this moratorium is to allow the General Assembly ample time to study the extent and scope of military operations in the State as directed in subsection (d) of this section and to consider the impact of future wind energy facilities and energy infrastructure on military operations, training, and readiness. Neither the Department of Environmental Quality nor the Coastal Resources Commission shall issue a permit for a wind energy facility or wind energy facility expansion for the period beginning January 1, 2017, and ending on December 31, 2018.

Until such time as permitting of wind energy facilities is allowed, no additional wind farms will be built, and therefore, there will be no additional wind farm turbine elevators to inspect.

The EAD will inspect existing elevators permanently installed in a wind turbine tower that provide vertical transportation of authorized personnel and their tools and equipment only. The turbine service lifts begin on the ground floor of the turbines and rise approximately 281 feet. These lifts are cable driven. It is important that our EAD inspectors know the safety considerations for these specialty lifts. National standards were adopted in 2016 by the American Society of Mechanical Engineers; the safety standard is known as A17.8-2016.

These specialty lifts do not have the same requirements and standards as a standard elevator in a commercial or residential building. The lift must be approved before it is put into use. The lift must be

tested by a certified inspection at least once per year. Working in and on wind turbines requires special safety training.

This proposed rule will impact the EAD inspectors who will increase that inspection capacity, currently to an additional 104 turbine service lifts per year. Due to the environmental issues (bears, snakes, insects, heat) and the required specialty training. NCDOL EAD inspectors have worked out a system to perform inspections of the turbine service lifts.

The current 104 wind turbines were inspected by three inspectors. The proposed rule is designed to provide inspectors current comprehensive safety standards for them to implement a comprehensive assessment of the turbine lifts, while minimizing compliance burden associated with specific, nationally-implemented criteria.

## **2. Estimated Economic Impact Analysis**

### **2.1 Costs – State Government**

#### Standards

Plan to purchase two sets of standards at a cost of \$ 58.00 each (\$116.00 total)

#### Training

Training given onsite based on turbine design and hazards by the turbine mechanical specialist. Training includes approximately 2-man hours per employee. Training for the existing wind turbines has been completed. If no new types of wind turbines are built, there will be no need for additional training. Should new of wind energy facilities be approved in the future, it will take two man-hours per employee for the training.

2 inspectors x 2 total hours at average of \$31/hr. = \$124.00

#### Clothing (prior monies spent)

In 2017, EAD purchased additional severe weather clothing for inspectors based on the environment and hazards, that include extreme cold weather, due to the time of the planned inspections. The area is also known for large amounts of insects, bees, ticks, and fleas even in winter.

#### Devices

NCDOL has previously purchased photographic/ video equipment. Estimate of total cost \$6,500.00 (one-time cost). The agency does not anticipate needing to incur this cost again until such time as the photographic equipment fails.

## INSPECTORS

The average cost for an EAD inspector compensation ranges from \$51,775 per year to \$75,888 per year. The acceptance of the 104 units was conducted by 3 teams of inspectors. Three inspectors were used due to the time needed to bring units online. Future compliance inspections will not require three inspectors. The initial inspection in 2017 took about 3 weeks of work to complete the inspections, including having most of the inspection staff staying at a local hotel during the week to reduce travel time to the site, as no inspecting officers live in that area. Additional costs incurred were meals and lodging. The agency will also need to do the same for the compliance inspection in the future; however, that work will be performed by a reduced work force to include six men averaging 40 hours, to include 10 hours travel time prior to the work week.

### Future initial inspections should mortarium be lifted

3 inspectors x 2 weeks at 40 hours per week + 30 hours travel (270 hours) at average of \$31/hr. = \$8,370.00

### Future compliance inspections per wind farm:

2 inspectors x 2 weeks at 40 hours per week + 20 hours travel (180 hours) at average of \$31/hr. = \$6,200

## **2.2 Costs – Private Sector**

200.00 per unit x 104 = \$20,800.00 (receipts) Amazon Wind Farm

Compliance inspections = \$200.00 per unit - Cost of each turbine inspection

All wind turbines are built to the specifications of the standard for wind turbines, A17.8-2016 - American Society of Mechanical Engineers (“ASME”). The adoption of the ASME safety standards by EAD does not create additional costs for the owners of wind turbines. The adoption of the ASME safety standards provides that the inspections performed on the wind turbine elevators will be in coordination with the ASME standards by which the wind turbine elevators are built. The adoption will assure that the inspection of the wind turbine elevators is in alignment with the standards required for construction of the elevators.

The ASME A17.8-2016 standards are currently in use by owners/operators of wind energy facilities. The adoption of the ASME A17.8-2016 by NCDOL will not create any additional costs for the owners/operators of wind energy facilities.

## **3. Health and safety benefits**

Unsafe and defective lifting devices imposes a substantial probability of serious and preventable injury to employees and any possible public who may be exposed to unsafe elevator conditions. The safety standards in the proposed rules will provide protection for those employees exposed to the lift equipment and any potential public who may enter the turbine elevators. Please note that all wind energy facilities are secured locations that are not open to the general public.

**Proposed Rule:**

**13 NCAC 15 .0208 SAFETY STANDARDS FOR WIND TURBINE TOWER  
ELEVATORS**

(a) The design, construction, installation, alteration, repair, replacement, inspection, maintenance and operation of all installations of wind turbine elevators shall conform to the rules in this Section and the A17.8-2016 - American Society of Mechanical Engineers, which is hereby incorporated by reference. This incorporation includes subsequent amendments and editions of this Code.

(b) The rules of this Chapter shall control when any conflict exists between these rules and the A17.8-2016 - American Society of Mechanical Engineers.

(c) Copies of the A17.8-2016 - American Society of Mechanical Engineers are available for inspection at the offices of the Division, and may be obtained from the American Society of Mechanical Engineers (ASME), via U.S. Mail at ASME Headquarters, Two Park Avenue, New York, New York 10017, via telephone at (800) 843-2763, or via the internet at [www.asme.org](http://www.asme.org). The publication is available in print or digitally at a cost of cost is fifty-eight dollars (\$58.00) per copy.

*History Note: Authority G.S. 95-110.5;*