Economic Impact Analysis
Virginia Department of Planning and Budget

16 VAC 25-155 – General Requirements for Clearances, Construction of Electric Transmission and Distribution Lines and Equipment, Construction Industry
Department of Labor and Industry
August 23, 2003

The Department of Planning and Budget (DPB) has analyzed the economic impact of this proposed regulation in accordance with Section 2.2-4007.G of the Administrative Process Act and Executive Order Number 21 (02). Section 2.2-4007.G requires that such economic impact analyses include, but need not be limited to, the projected number of businesses or other entities to whom the regulation would apply, the identity of any localities and types of businesses or other entities particularly affected, the projected number of persons and employment positions to be affected, the projected costs to affected businesses or entities to implement or comply with the regulation, and the impact on the use and value of private property. The analysis presented below represents DPB's best estimate of these economic impacts.

Summary of the Proposed Regulation

The General Assembly authorizes the Safety and Health Codes Board in §40.1-22 of the Code of Virginia to adopt, alter, amend, or repeal rules and regulations to further, protect, and promote the safety and health of employees in places of employment over which it has jurisdiction and to effect compliance with the federal Occupational Safety and Health Act of 1970, and as maybe necessary to carry out its functions. The Code requires the standards promulgated by the Safety and Health Codes Board to be at least as stringent as the standards promulgated by the federal Occupational Safety and Health Act of 1970.

The proposed regulation modifies standards for the protection of construction industry employees working on live electricity transmission lines such that they are identical to the standards of protection afforded to general industry electrical transmission workers. Employers will now be required to provide construction industry employees working on live electricity

transmission lines with protection not only against the energized part of the wire the employee is working on, but also against any surrounding live electrical parts and power lines.

Estimated Economic Impact

The proposed regulation tightens standards for the protection of construction employees working on live electrical transmission lines. The existing regulation prohibits electrical transmission workers in the construction industry from approaching or taking a conductive object without an approved insulated handle to within a minimum distance from an exposed energized part unless (i) they are insulated against the energized part(s) through the use of insulated gloves or insulated gloves with sleeves, (ii) the energized part is insulated from the worker and other conductive objects in the area, or (iii) the employee is insulated from exposed conductive objects in the area. Thus, under existing policy, the use of insulated gloves or insulated gloves with sleeves would be considered adequate protection against energized parts and the worker would be permitted to operate in closer proximity to these energized parts than the minimum distance specified by the regulation. Under the proposed regulation, however, the use of insulated gloves or insulated gloves with sleeves will be considered adequate protection only against the energized parts the individual is working on. In order to perform work inside of the regulation-specified minimum distance, employers will be required to provide their workers with additional protection and insulation against any surrounding live electrical parts and power lines.

The proposed change will make the safety standards for construction industry employees working with live electrical transmission lines consistent with standards for workers performing electrical transmission work under general industry standards. According to the Department of Labor and Industry (DOLI), the need for the proposed change was felt when a worker wearing the appropriate insulation gloves and sleeves was electrocuted in February 2000 when his neck/shoulder touched an uninsulated 7,600 volt power line. In September 1999, another worker suffered burns as a result of failing to properly insulate against some power lines. In both cases, the incidents occurred when the workers made accidental contact with an unprotected portion of the power lines. Insulated gloves or insulated gloves with sleeves only protect the individual from the energized part they are working on, leaving them vulnerable to contact with live electrical parts and power lines in adjacent areas. The existing regulation is based on federal standards (29 CFR 1926 Subpart V: Safety and Health Regulations for Construction, Power

Transmission and Distribution) that have proved inadequate in protecting workers from live electrical parts and power lines in areas other than the energized part being worked on. There have been several Occupational Safety and Health Review Commission cases in Massachusetts and Georgia in which workers have been injured or killed due to inadequate insulation against all live electrical parts and power lines in the immediate vicinity of where electrical work is being performed. By making the proposed change, DOLI intends to provide electrical transmission workers in the construction industry with the same safeguards as those enjoyed by electrical transmission workers that fall under the general industry classification and reduce the likelihood of accidents in the future occurring as a result of unprotected contact with live electrical parts and power lines.

The proposed change is likely to impose additional costs on employers not currently complying with the general industry standards for employees working with live electrical transmission wires, i.e., not protecting their employees against all live electrical parts and power lines they might be exposed to.[1] According to the regulatory impact and regulatory flexibility analysis conducted by the Occupational Safety and Health Administration (OSHA) at the time the general industry standards were adopted, the first-year cost of implementing the standards was estimated at approximately $41 million with recurring costs of approximately $21 million in each following year. The cost included the cost of purchasing and maintaining the required equipment, conducting inspections, and providing training to employees and was to be distributed across 12,074 entities including utility companies, independent power producers and generators, contract tree trimmers, and high voltage contractors. Based on the study, on average it would cost a firm approximately $3,400 in the first year and $1,800 in each subsequent year to comply with the standards. The study estimated that the impact of implementing the general industry standards is likely to range from less than 0.1% to 1.1% of a company's pre-tax profits.

While the proposed change may impose additional costs on some employers, it is also likely to produce economic benefits. The OSHA analysis states that implementing the general industry standards is "expected to significantly reduce the number of fatalities and injuries involving electrical contact, flash burns, and thermal burns, as well as other accidents involving uncontrolled exposure to occupational hazards". The study estimates that the standards are likely

to prevent at least 61 fatalities and 1,633 lost-workday injuries compared to a baseline estimate of accidents and lost-workday injuries of 86 and 12,977, respectively.[2] Work place accidents generate losses for companies through time lost to injuries and fatalities, damage to equipment and cost incurred in repairing or replacing it, increased insurance costs, and higher wage and salary costs required to compensate workers for the increased risk of death or injury.

However, the costs and benefits of the change being proposed are likely to be smaller than that estimated by the OSHA analysis. Employees working in the electric power generation, transmission, and distribution industry face a variety of occupational hazards including electrocution. While inadvertent contact with high-voltage electricity is the most common source of occupational injuries and fatalities, it is not the only source. The general industry standards for which the regulatory impact analysis was conducted included the costs and benefits of providing workers with adequate protection against all sources of occupational injuries and fatalities, including but not limited to electrocution. The change being proposed, however, only deals with protection against injuries and fatalities arising out of exposure to high-voltage electricity. Moreover, as most of the requirements of the general industry standards for protecting workers specifically against electrocution are already required under existing policy, the impact of the proposed change is likely to be significantly less than indicated by the OSHA analysis (which includes the costs and benefits of implementing all the various standards required to protect workers against electrocution).

DOLI estimates that there are 195 entities operating in Virginia that could be affected by the proposed regulation. However, the agency does not believe that the overall effect of the proposed change is likely to be significant. A majority of the 195 affected entities also perform work that falls under the general industry classification and thus already have the required equipment, perform the required maintenance, and provide the required training to their workers. The incremental cost of the proposed change on these entities is likely to be negligible.

Only entities not currently complying with the general industry standards will have to incur the additional cost of providing the necessary equipment and training to their employees.

[1] The general industry standards are included in 29 CFR 1910.269: Occupational Safety and Health Standards for Electric Power Generation, Transmission, and Distribution

[2] The baseline refers to electric utility practices prior to the implementation of the general industry standards for electric power generation, transmission, and distribution.

These companies are likely to have chosen not to comply with these standards as the costs associated with doing so outweigh the benefits of doing so (such as reduced losses from time lost to injuries and fatalities, damage to equipment, increased insurance costs, and higher wage and salary costs required to compensate workers for the increased risk of death or injury). There could be two reasons why expected costs are higher than expected benefits: the costs imposed by the regulation are higher than warranted by the risk of injury and death or that the benefits firms expect from implementing the standards are not large enough to justify doing it.

Expected Costs: If we assume that the proposed change and the cost associated with implementing it is disproportionately high given the risks faced by workers, the proposed regulation is likely to have a negative economic impact. Based on the OSHA analysis, net present value of the cost per entity of implementing the general industry standards is approximately $32,000 (using a discount rate of 6.31%, the average yield on 30-year treasury bonds in the past three years). Net present value of the cost of implementing the proposed change is likely to be significantly lower than $32,000 per entity. Evidence provided by DOLI indicates that there have been several cases of death of injury occurring as a result of improper insulation of workers against all energized parts. The cost effectiveness of the regulation will depend on the number of lives saved and injuries prevented in the future as a direct result of the regulation. A $32,000 lifetime cost per entity for lives saved and injuries prevented is well within the range commonly used to justify expenditures on reducing morbidity and mortality. Moreover, as most companies are currently complying with these standards, the cost on the industry as a whole of implementing the proposed change is not likely to be significant, especially compared to other life-saving policies implemented by state and federal governments. Thus, there is no reason to conclude that the costs imposed by this rule are excessive

Expected Benefits: If, on the other hand, we assume that the safety standards and hence the costs imposed by the proposed change constitute minimum safety standards given the risk of injury or death, companies that are not voluntarily enforcing these standards are doing so because the expected benefits from implementing the standards are less than the costs of doing so. By having employees work without adequate insulation and protection, these companies are putting their employees in a potentially hazardous situation. Market forces (through various costs such as time lost to injuries and fatalities, damage to equipment as a result of accidents, and

wage and insurance costs) work to ensure that these companies provide a certain minimum level of protection to their workers. If expected benefits (such as less time lost to injury, less damage to equipment, and lower insurance and wage costs) are outweighed by the expected costs of meeting the proposed standards, companies would not voluntarily choose to enforce these standards.

Expected benefits could be low because the level of risk deemed acceptable by the market is higher than what is provided under this regulation. For example, the insurance and compensation (wages and benefits) costs incurred by companies might reflect the cost of reducing the risk of death or injury to workers to a level considered appropriate by the market. However, the change being proposed by this regulation might seek to reduce the risk even further. Under these circumstances, companies would prefer to incur the insurance and compensation costs rather than incur the costs of voluntarily meeting the safety standards.

Expected benefits could also be low because the potential benefits of meeting these safety requirements are not an accurate reflection of the actual benefits. Compensation costs and insurance costs faced by these companies may not accurately reflect the risk of injury or death to workers and hence companies' perception of the risk posed to workers is likely to be lower than the actual risk. Under these circumstances, companies would not choose to voluntarily implement the safety standard being proposed.

Thus, if there if there is reason to believe that these occupational risks are not being set at the optimal level through market forces, and if the safety requirements being proposed in the regulation are minimum safety standards required in order to reduce the risk of injuries and fatalities to a level deemed appropriate, the proposed regulation is likely to have a positive economic impact.

Conclusion: The proposed regulation will impose no significant additional costs on businesses and entities currently complying with the proposed standard. However, it is likely to impose additional costs on companies not currently complying with these requirements. The proposed regulation is likely to have significant economic benefits by preventing future injuries and fatalities among employees in the construction industry working with live electrical parts. These benefits include less time lost to injuries and fatalities, less damage to equipment and lower costs incurred in replacing or repairing it, and lower insurance and compensation costs.

The net economic impact of the proposed regulation will depend on whether the standards being proposed in the regulation are excessive or constitute minimum safety standards in order to provide electrical transmission workers with a level of protection that is deemed adequate. If the standards being proposed are excessive, the proposed regulation will impose unnecessary costs on businesses and entities in the electric power generation, transmission, and distribution industry and have a net negative economic impact. If, on the other hand, these standards are the minimum safety standards required in order to provide a reasonable degree of protection to workers against injuries and fatalities, the proposed regulation is likely to have a positive economic impact. The cost of implementing the proposed change appears to be well within the range of expenditures made to prevent morbidity and mortality in other industrial sectors.

Businesses and Entities Affected

The proposed regulation is likely to affect 195 businesses and entities in Virginia including utility companies, independent power producers and generators, contract tree trimmers, and high voltage contractors. These businesses will now be required to protect their employees not only against the energized parts that they are working on, but also against any surrounding live electrical parts and power lines. Most of the 195 businesses mentioned above already provide their employees with the required equipment and training and are not likely to be significantly affected by the proposed change. Businesses that do not currently comply with the standard being proposed are likely to face some additional costs as a result of this regulation.

Localities Particularly Affected

The proposed regulation will affect all localities in Virginia.

Projected Impact on Employment

The proposed regulation is not likely to have a significant impact on employment in Virginia. While some companies may have to incur additional costs in complying with the requirements of the regulation, it is not likely to be large enough to affect the number of employees they hire.

Effects on the Use and Value of Private Property

The proposed regulation is likely to affect businesses and entities providing electrical power generation, transmission, and distribution services in Virginia. While most of these businesses are already complying with the requirements of the regulation, some that are not will incur additional costs in providing their employees with the required equipment and training. However, these costs have to be balanced against the benefit to the power generation, transmission, and distribution industry of having a reputation for safe operation plus any additional savings on insurance costs and labor compensation costs.