The East Central Area Reliability Council (ECAR) is one of the ten Regional Reliability Councils of the North American Electric Reliability Council (NERC). Established in 1967, ECAR augments the reliability of its members' electricity supply system through the coordination of the planning and operation of the members' generation and transmission facilities. ECAR's membership includes 29 major electricity suppliers located in nine east-central states serving more than 36 million people. The ECAR organization is comprised of seven technical advisory panels, one of which is the Protection Panel. The intention of this letter is to express the ECAR Protection Panel's concern with ARRL's proposal to allow amateur radio operation in the power line carrier (PLC) frequency spectrum utilized by the electric utility industry. For the benefit of a limited number of hobbyists, the ARRL proposal has the potential to jeopardize the integrity of the electric service provided to the public and industry.

Power line carrier equipment used in protection systems on transmission lines and other equipment is very reliable. However, misoperations do occur and can result in loss of customer load or undesirable removal a piece of equipment from service. Each misoperation is investigated and most of the time the cause can be ascertained. However, occasional misoperations cannot be explained. The source of the misoperations may or may not be outside interference, but outside interference cannot be dismissed, even if there are no known documented occurrences.

The amateur community is subdivided into many small segments according to the interests of individuals. There are approximately 300,000 licensed amateurs in the United States. It is estimated that less than half are actually active in the hobby; the rest are licensed, but do not pursue any activity. Based on the less than 150,000 active amateurs, and the fact that the amateur community is subdivided into a great number of special interests, it is reasonable to assume that the actual users of the new proposed amateur band would be less than 5% of the active amateurs, or around 7,500. Although the number of beneficiaries of the ARRL proposal is small, this small number would be adequate to cause considerable problems for utilities.

It is worthwhile to compare the very small number of beneficiaries from the ARRL proposal to the number of people who could be adversely affected by the ARRL proposal. Consider a typical utility 138,000 volt transmission line which uses power line carrier for protection purposes. This line may have from one to five 20,000 kVA transformers which reduce the voltage to a distribution level. The number of residential customers fed from this size transformer ranges from 4000 to 6000. Thus, one misoperation of the power line carrier due amateur radio operation could interrupt electric service to 4000 and up to as many as 30,000 residential customers.

Furthermore, outages to industrial and commercial customers have economic penalties far beyond the inconveniences and disruptions suffered by residential customers. The economic consequences of outages to industrial and commercial customers is much greater than the revenue lost by the utility due to loss of load. Millions of dollars are wasted in ruined product, cleanup, restarting industrial processes and idle labor. One such outage due to amateur radio operation is one outage too many.

Worse scenarios are possible, although the probability is extremely low. Power line carrier is the most prevalent communications channel used in protection applications on the bulk power transmission system in the United States. The gigantic installed infrastructure and economics dictate that power line carrier will maintain this status for many years to come. Unless the protection

communications functions can be combined with other communications functions, fiber optics and microwave are not cost competitive with PLC. The protection communications paths required between substations, often in remote locations, rarely coincide with other communications needs. One PLC vendor reported that they estimate that fiber optics has made less than a 10% impact on their sales of PLC equipment.

While modern PLC transmitters and receivers use frequency synthesis techniques which allow the PLC frequency to be easily changed, there are other considerations before the frequency can be changed. The transmitters and receivers often have input filters which cover a narrow range. If the required frequency change is outside the range of the filter, a new filter must be purchased. Other “line tuning” equipment external to the transmitter/receiver may not be able to accommodate a frequency change. There are equipment costs, engineering labor, and field installation expenses associated with frequency changes which ultimately will be born by the utility customers.

Amateur radio operators currently have of a wide range of frequencies available to them, from just above the AM broadcast band, through the HF, VHF, UHF spectrums and into the microwave region. Some of the amateur bands are a number of Megahertz wide. This range of frequencies provides ample opportunity for experimentation by the hobbyist without jeopardizing the electric system.

The ARRL aggressively defends frequencies allocated for amateur use against any proposed encroachment. The ARRL often points out the public service aspect of amateur radio. The overwhelming public interest is served by not allowing additional users into the power line carrier spectrum. The public will experience either degraded reliability of electric service, or increased costs if the ARRL proposal is adopted. The unlicensed operation of power line carrier systems by utilities has served the public interest well for years. The unlicensed status of utility operations should not prevent Federal agencies from protecting the public interest.