

**Development of an Prototype Soil Quality Indicator, Phase 2 (NYSERDA Agreement 7637-2)** – This study continues the successful phase 1 work that proved the feasibility of extending the electrical impedance measurement technology previously developed for asphalt density measurement (PQI™) to measuring soil compaction and moisture content in typical utility excavation and repair backfill soils. By working closely with utility industry and university partners, TransTech Systems is addressing the root cause of the majority of pavement failures around utility openings: improper compaction of the backfill soil prior to repaving. It is expected that TransTech’s innovative use of multi-frequency impedance spectroscopy, physics-based modeling of the material, the sensor and the compaction process, and Artificial Neural Networks (ANN) in this Phase, will allow for the development of a prototype Soil Quality Indicator (SQI™) capable of being used for in-process quality control of compaction efforts during the compacting of successive backfill lifts during utility repairs. It is very likely that the SQI™ program will eventually result in a single device capable of measuring the density and moisture levels of both general construction backfill soils and asphalt, depending on which mode the unit is run in. There is also an excellent chance for inclusion of the prototypes in one or more national studies aimed at finding non-nuclear devices capable of determining soil and/or asphalt density and moisture. The prototype has already been included in a study aimed at replacing nuclear gauges for use on soils that is being run by the University of Texas at Austin and funded by the Texas DOT.