

Our mission is to serve Texas by our stewardship of natural resources and the environment, our concern for personal and community safety, and our support of enhanced development and economic vitality for the benefit of Texans.

RRC Turns to Artificial Intelligence to Improve Seismicity Reviews

The Railroad Commission has turned to artificial intelligence to optimize the time the agency’s technical analysts spend on seismicity reviews to ensure residents and the environment are protected.

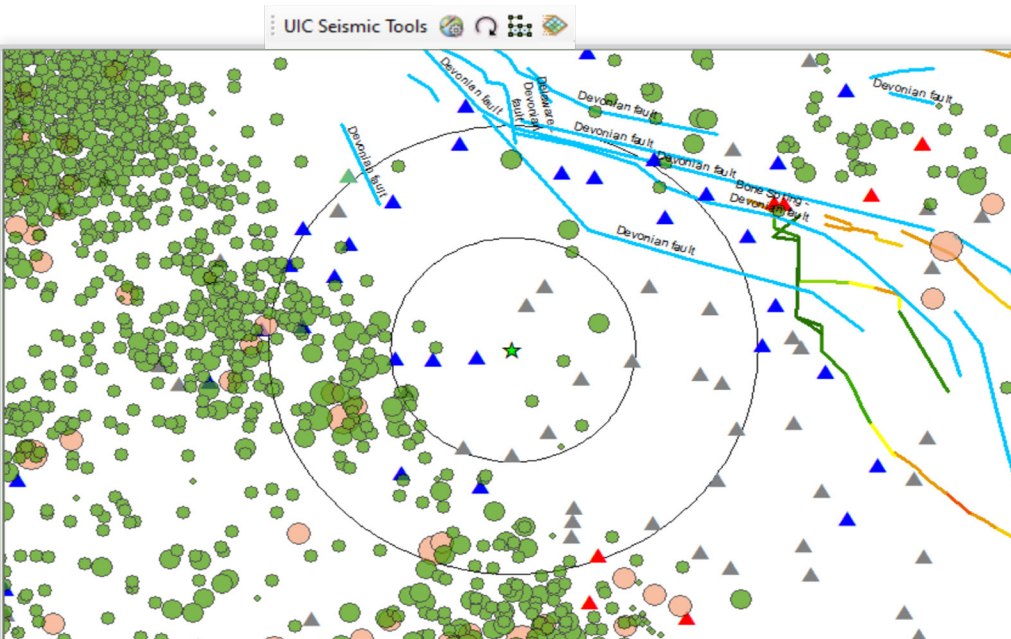
Seismicity reviews are conducted by the Underground Injection Control (UIC) Department for injection/disposal well permits in areas susceptible to earthquakes and in certain geologic zones. UIC staff programmed a machine learning algorithm to help with the large amount of information that needs to be processed

and digested. Along with some other changes, tasks performed by the machine learning algorithm have enabled UIC to wipe out a backlog of seismic reviews.

Like the technical analyst, the AI program weighs many factors related to the number, severity and proximity of earthquakes and uses a decision tree to assign a grade to the review. The higher the grade, the more the permit would be allowed to inject. If AI grades the seismic review with low grades, the technical analyst will consult with the agency’s seismologist on whether the permit

request should be denied or be allowed a minimal amount of disposal (10,000 barrels per day). The AI process, which has a high accuracy rate, assists the technical analyst, who reviews the data and ultimately makes the final judgment.

By embracing technology, including the automation and AI, permit approval times were reduced by 80%, and now take an average of 20 days as compared to the more than 100 days required as late as November 2018. More importantly, AI also ensures consistency in permitting decisions and how seismic and other factors are considered.



As the above illustration shows, Python scripts automatically collect GIS mapping of historic seismic events within a permit application’s area of interest, data which is used by the machine learning algorithm.

For more information on seismicity reviews, visit the following RRC webpage:

<https://www.rrc.texas.gov/oil-and-gas/applications-and-permits/injection-storage-permits/oil-and-gas-waste-disposal/injection-disposal-permit-procedures/seismicity-review/>

www.rrc.texas.gov

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