OUTAGE COMPENSATION CELL ZOOMING

SIGNAL LEVEL ANALYSIS

Presented at The Kabarak University Conference
by

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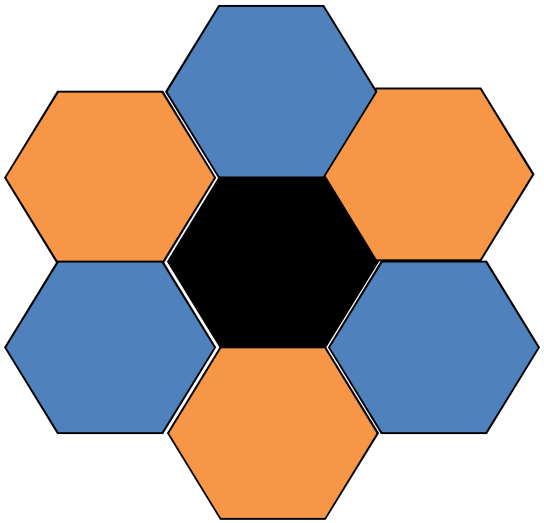
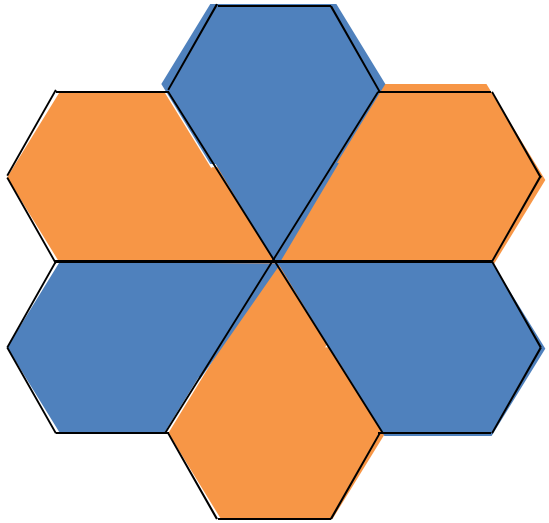
Outage Compensation Scenario



7 Cluster cells with black cell as target



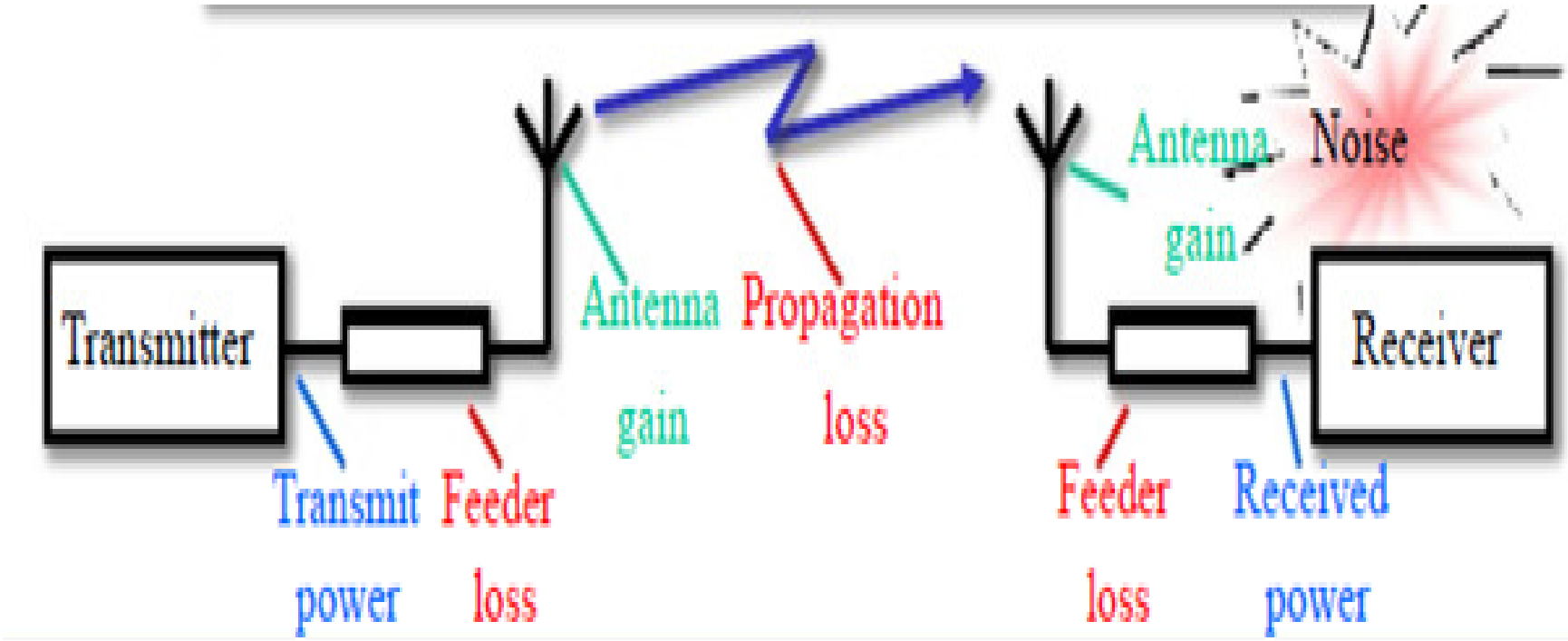
Same cluster after compensation

Fig : Outage Compensation Scenario

JUSTIFICATION

- If the solution is implemented it would contribute to
  - Cost saving
  - Faster response to fault clearance
  - Better customer experience
  - Better employee satisfaction
  - Improved employee productivity
  - Reduced human error
  - As the only available option

Path Loss


Transmitter
Transmit power
Feeder loss
Antenna gain
Propagation loss
Antenna gain
Noise
Feeder loss
Receiver
Received power

Propagation Models

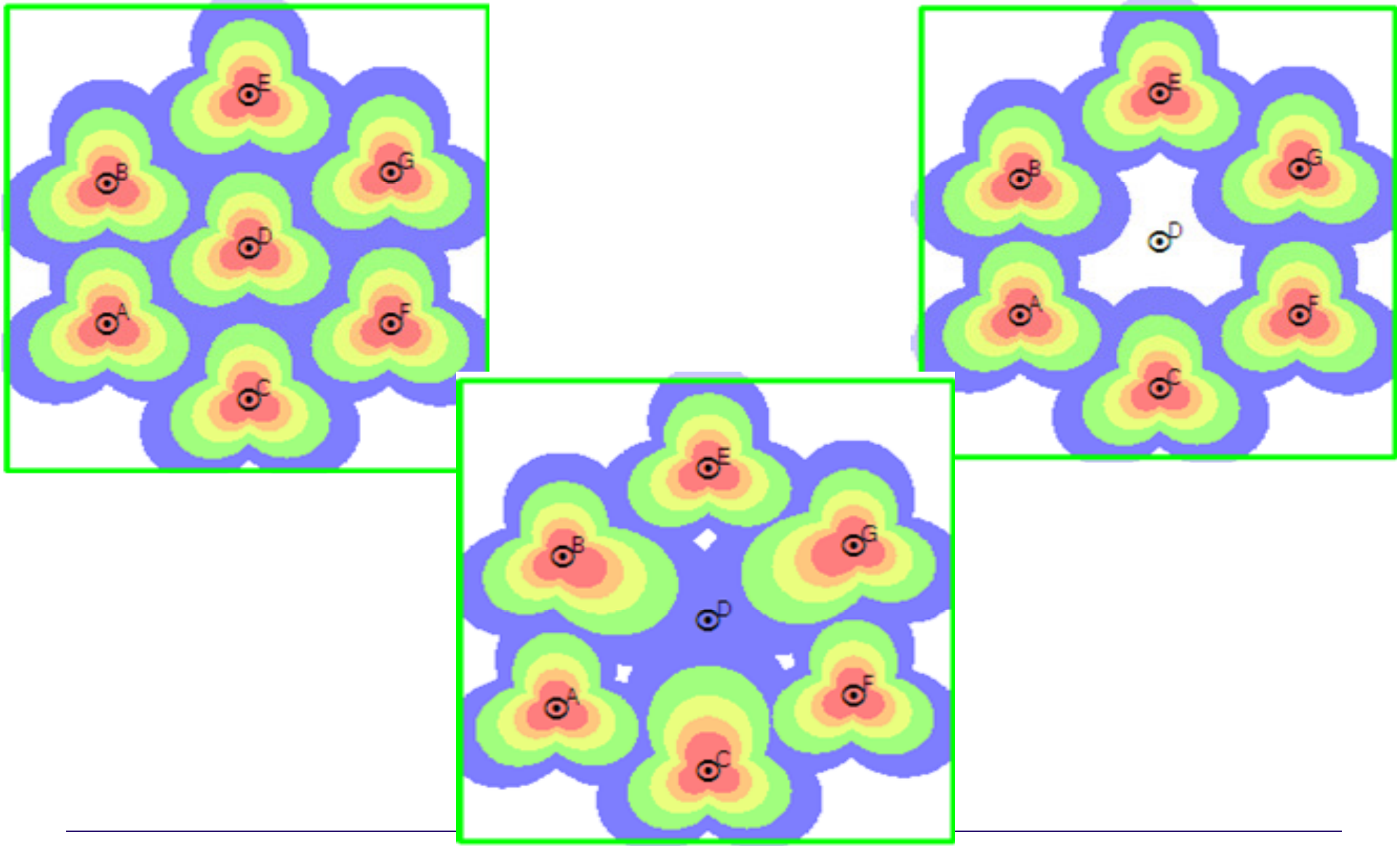
The received signal is dependent on

- Obstacles on the path
- Propagation frequency
- Transmit power
- Height of Transmitter and Receiver
- Topography

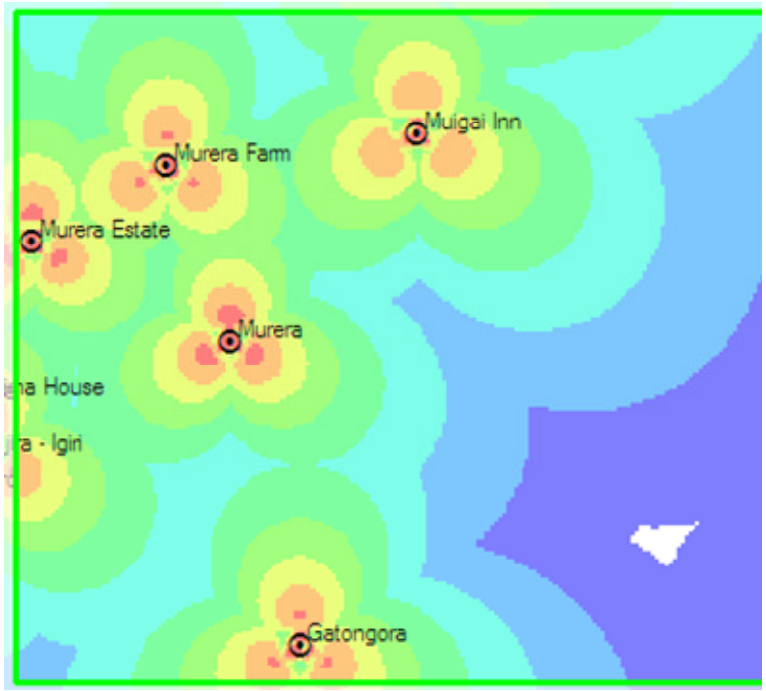
Cell Zooming methods

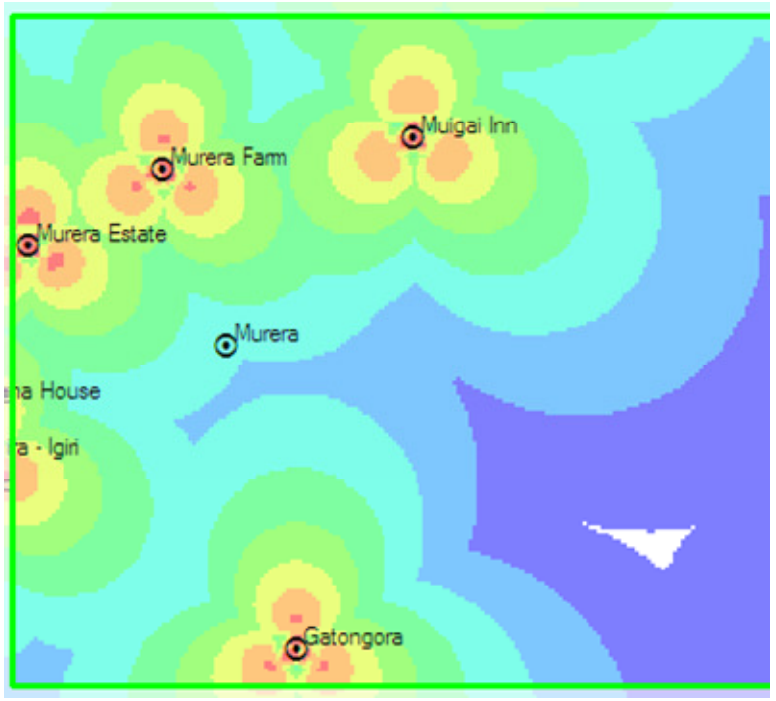
- Electrical zoom
- Electrical tilt
- Mechanical tilt
- Height adjustment

3 sectored cluster



CCK RECOMMENDATIONS

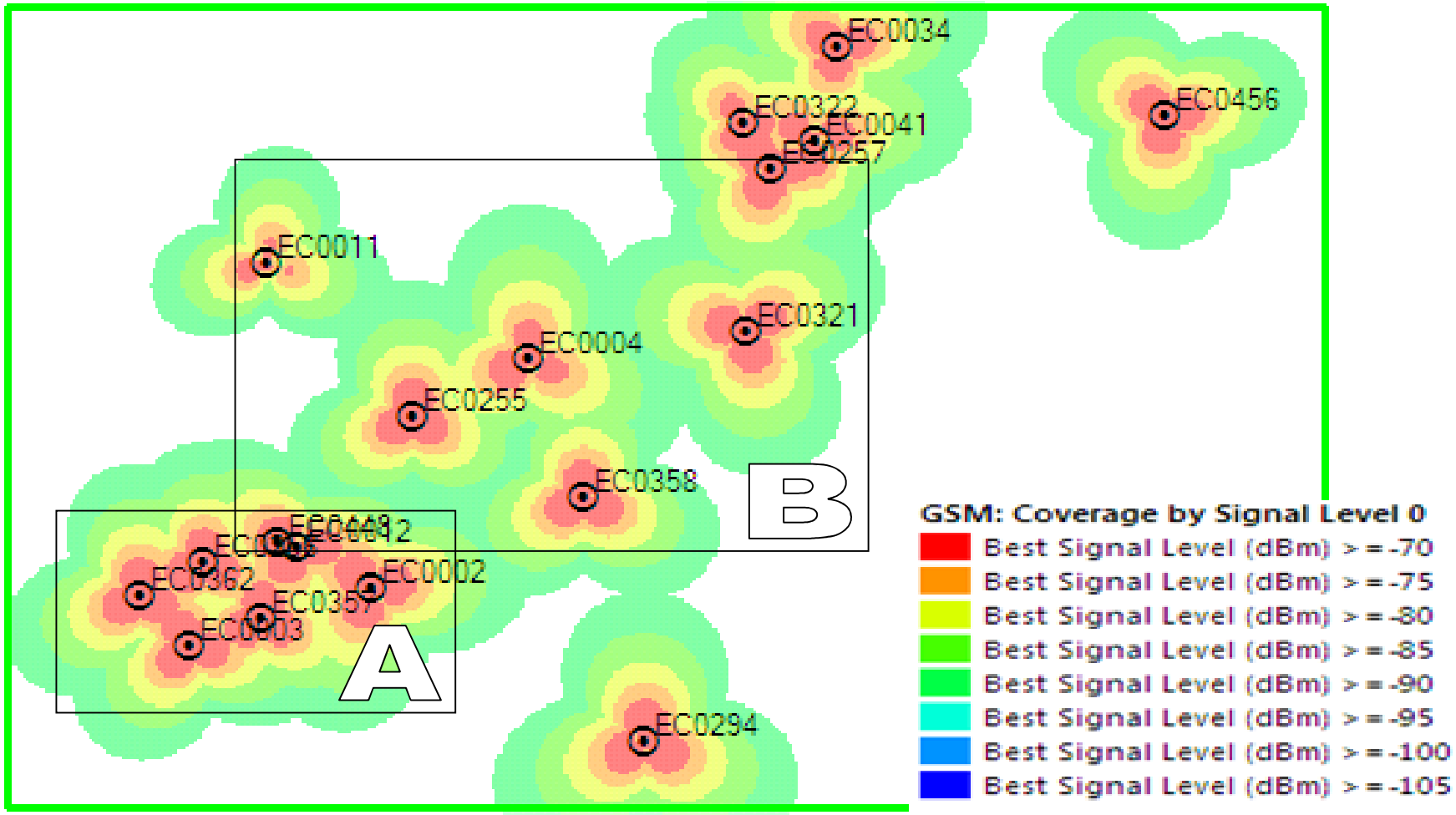




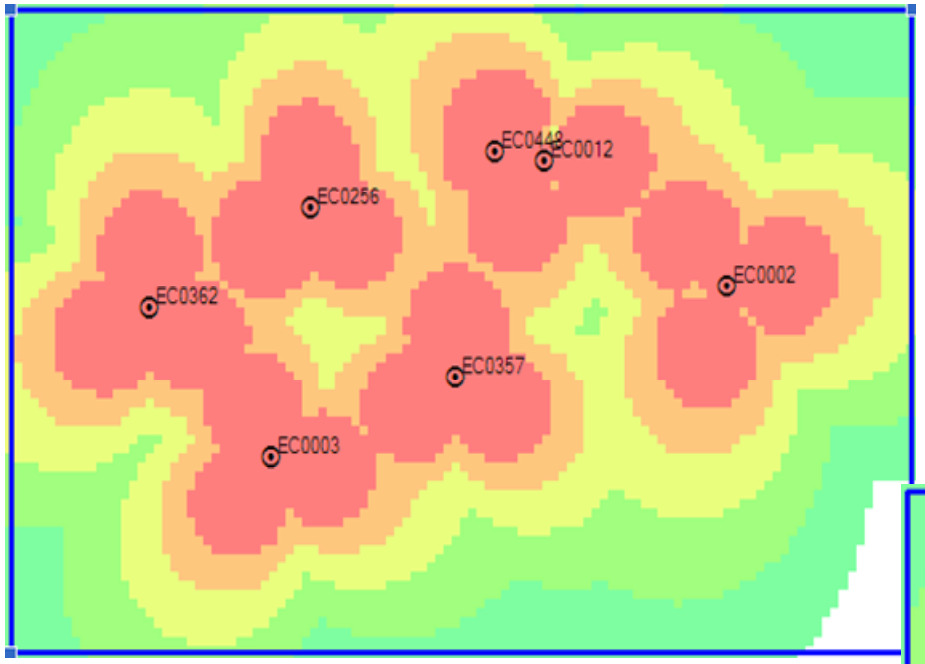
GSM: Coverage by Signal Level 0

- Best Signal Level (dBm) >=-70
- Best Signal Level (dBm) >=-75
- Best Signal Level (dBm) >=-80
- Best Signal Level (dBm) >=-85
- Best Signal Level (dBm) >=-90
- Best Signal Level (dBm) >=-95
- Best Signal Level (dBm) >=-100
- Best Signal Level (dBm) >=-105

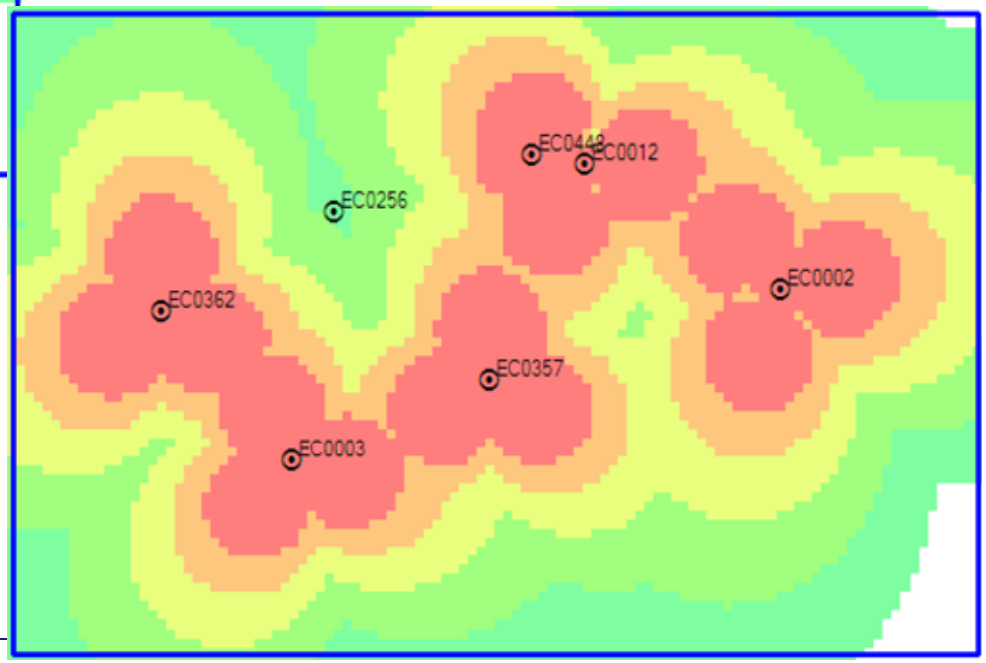
OPERATORS PLANNING



Dense region



No signal adjustment required



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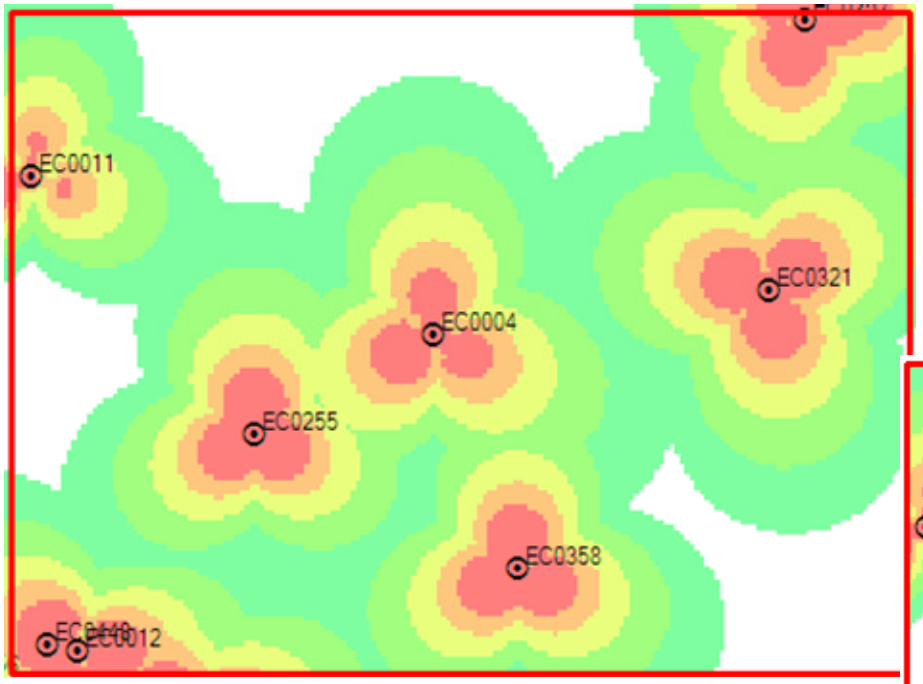
Spaced region



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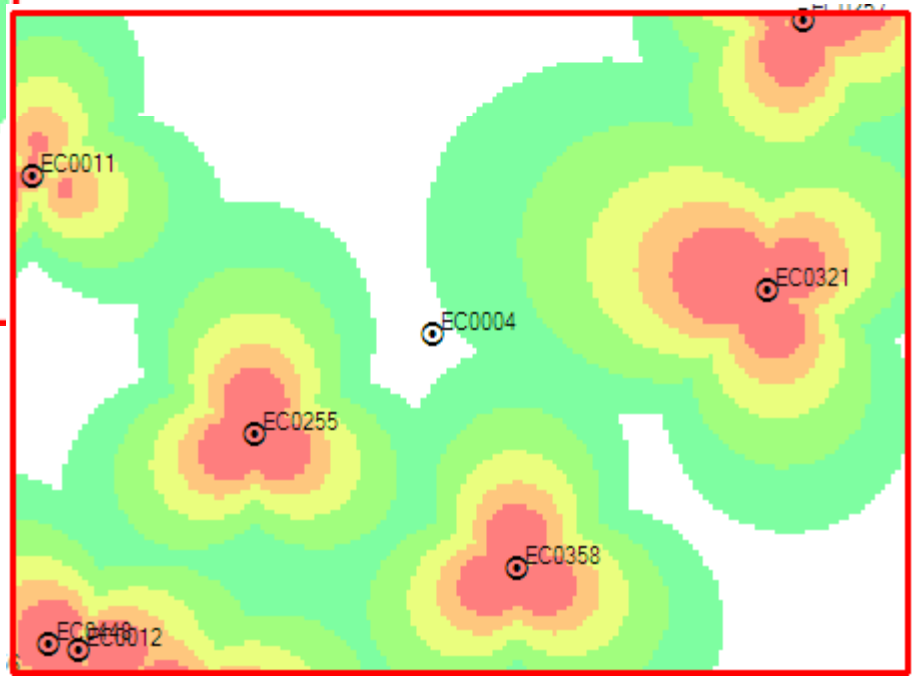
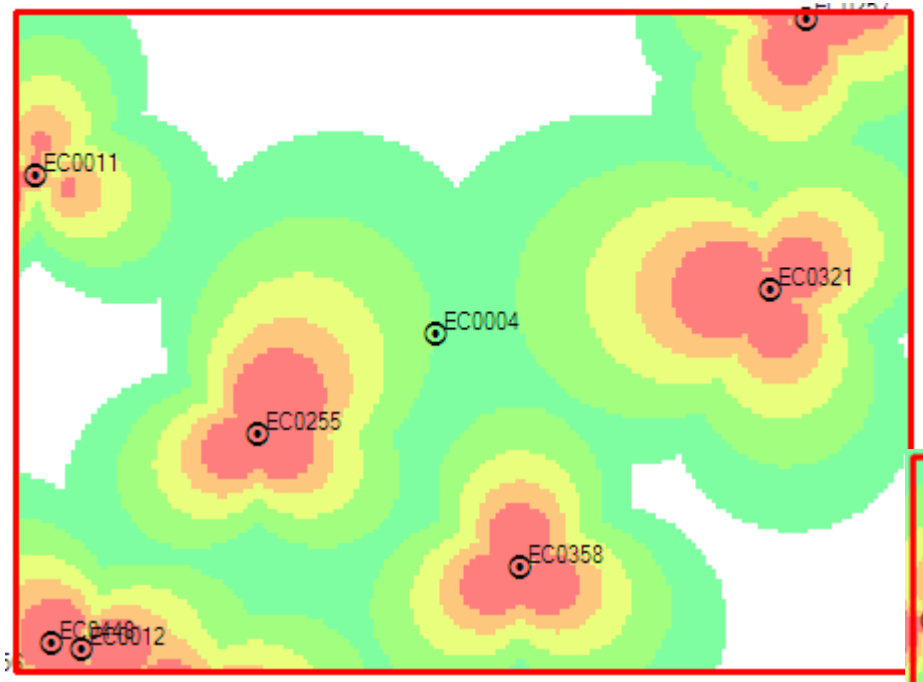
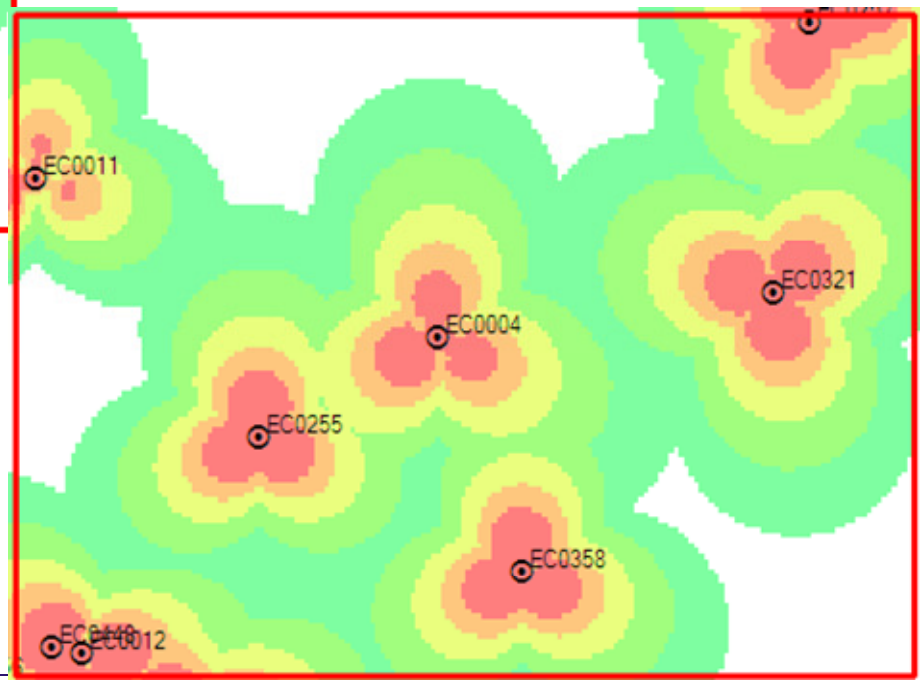
Signal adjustment required



Compensation for spaced region



Compensation done using cell 255 and 321
Azimuth of the two cells also adjusted for optimal compensation



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Conclusion

- The research demonstrates in theory the ability to vary signal levels to compensate for outage
- Capacity of compensating cells is critical