



NARROWING THE PATH

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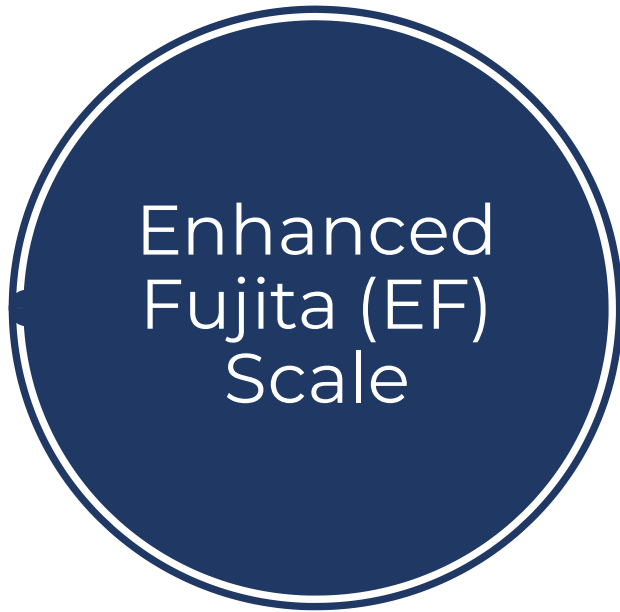




From the glossary of the American Meteorological Society

Tornado

A rotating column of air, in contact with the surface, pendant from a cumuliform cloud, and often visible as a funnel cloud and/or circulating debris/dust at the ground.



EF Rating	Character	3 Second Gust (mph)	Description
0	Weak	65-85	Light Damage. Branches broken off trees; shallow-rooted trees uprooted
1	Weak	86-110	Moderate Damage. Mobile homes pushed off foundations or overturned; roof surfaces peeled off
2	Strong	111-135	Considerable Damage. Mobile homes demolished; large trees snapped or uprooted
3	Strong	136-165	Severe Damage. Roofs and some walls torn from well-constructed houses; heavy cars thrown; trains overturned
4	Violent	166-200	Devastating Damage. Well-constructed homes leveled; structures with weak foundation blown some distance
5	Violent	Over 200	Incredible Damage. Strong frame houses lifted, carried considerable distances and disintegrated; auto-sized missiles airborne for several hundred feet or more

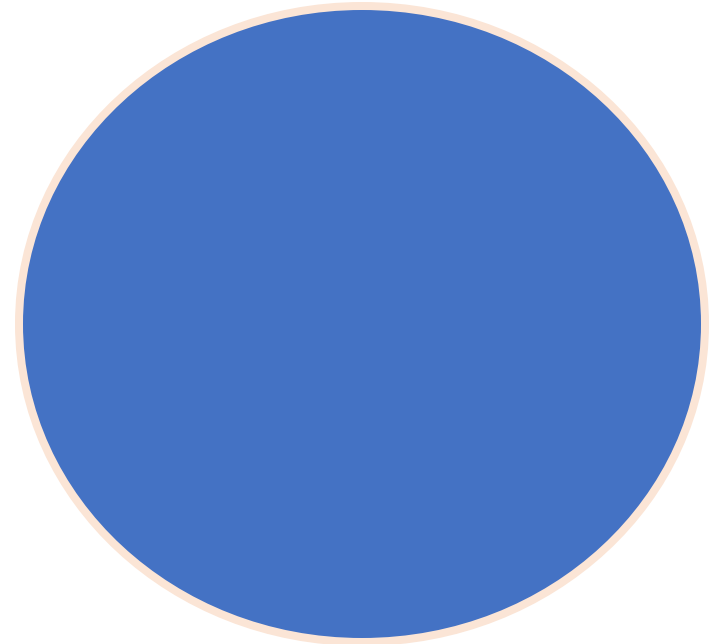
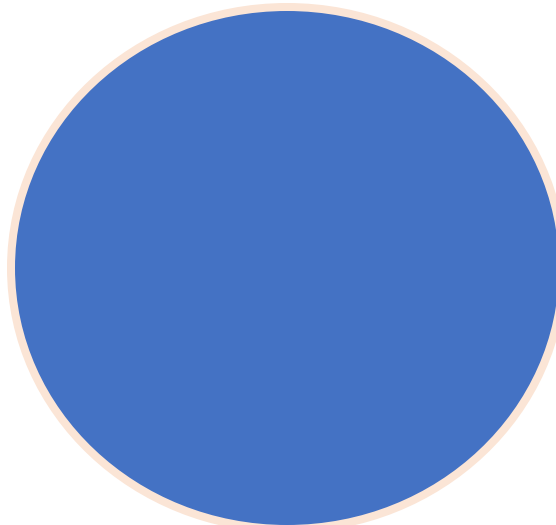
Thunderstorm Winds

Severe winds are reported most frequently of the 3 major hazards (wind, tornado, hail)

All types of thunderstorms can produce strong outflow winds

Strongest events can produce EF-0 to EF-2 damage severities

Thunderstorm Winds Scale



Microburst

Supercell

Squall Line

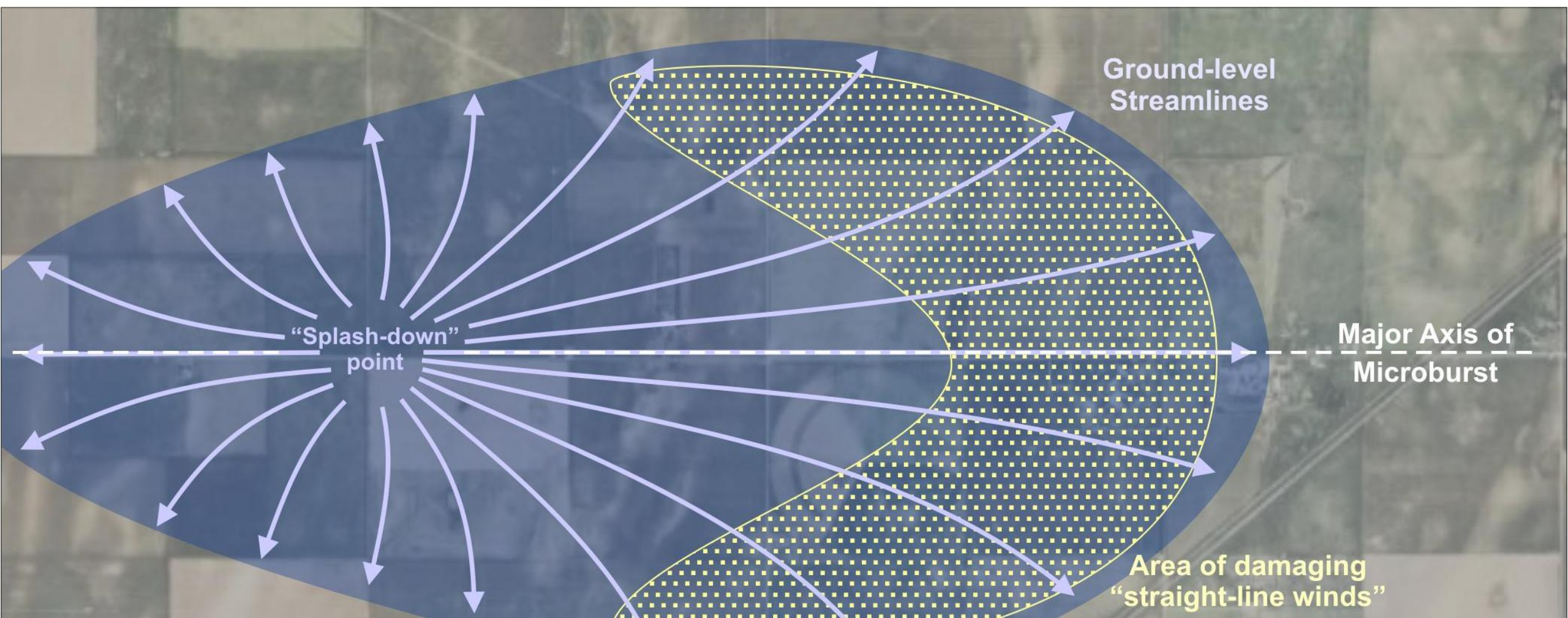
Derecho

Highly local
Can occur in
disorganized
storms

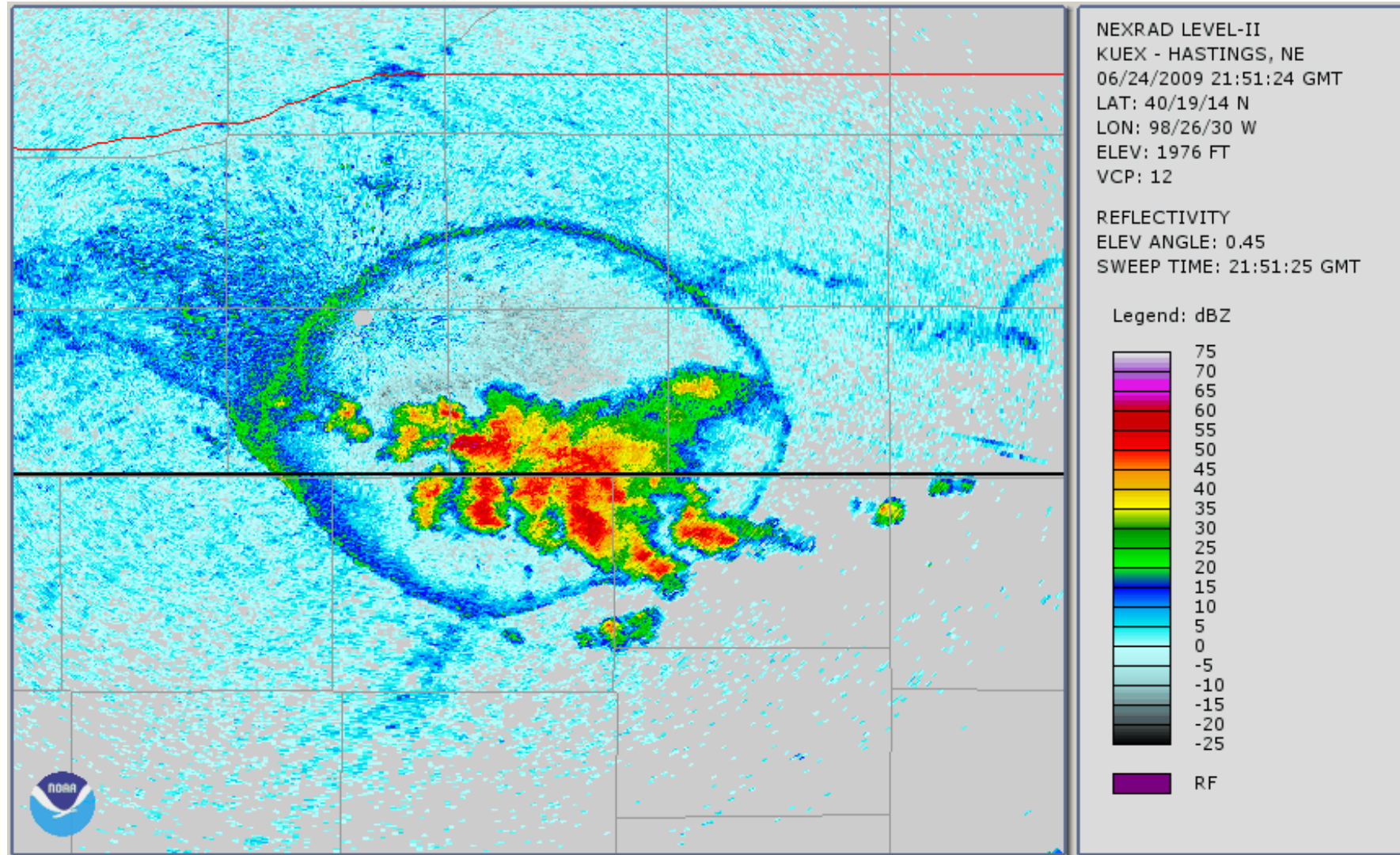
Local but can
continue over
lifespan of a
supercell (hours)

Large coverage
Strongest winds transient

Most severe
Long track



Outflow on Radar



Downburst & Microburst Damage Patterns



- Particularly strong downdrafts from thunderstorms
- Diverging damage pattern
- Surface wind gusts can reach 100+ mph
- Damage can be mistaken for tornado
- Hazardous for aircraft
- Very local and short lived

An aerial photograph of a residential neighborhood showing extensive damage to roofs and scattered debris. The houses are arranged in a grid pattern with streets and green spaces. The damage is most prominent in the upper and right portions of the image, where roofs are missing or severely damaged, and large areas of rubble are visible. The lower-left portion shows less damage, with some houses still having intact roofs.

WE CAN'T PREVENT
ALL DAMAGE.

BUT WE CAN
PREVENT THIS.



FIELD



April 13, 2020 Chattanooga, TN
EF-3 Tornado

IBHS



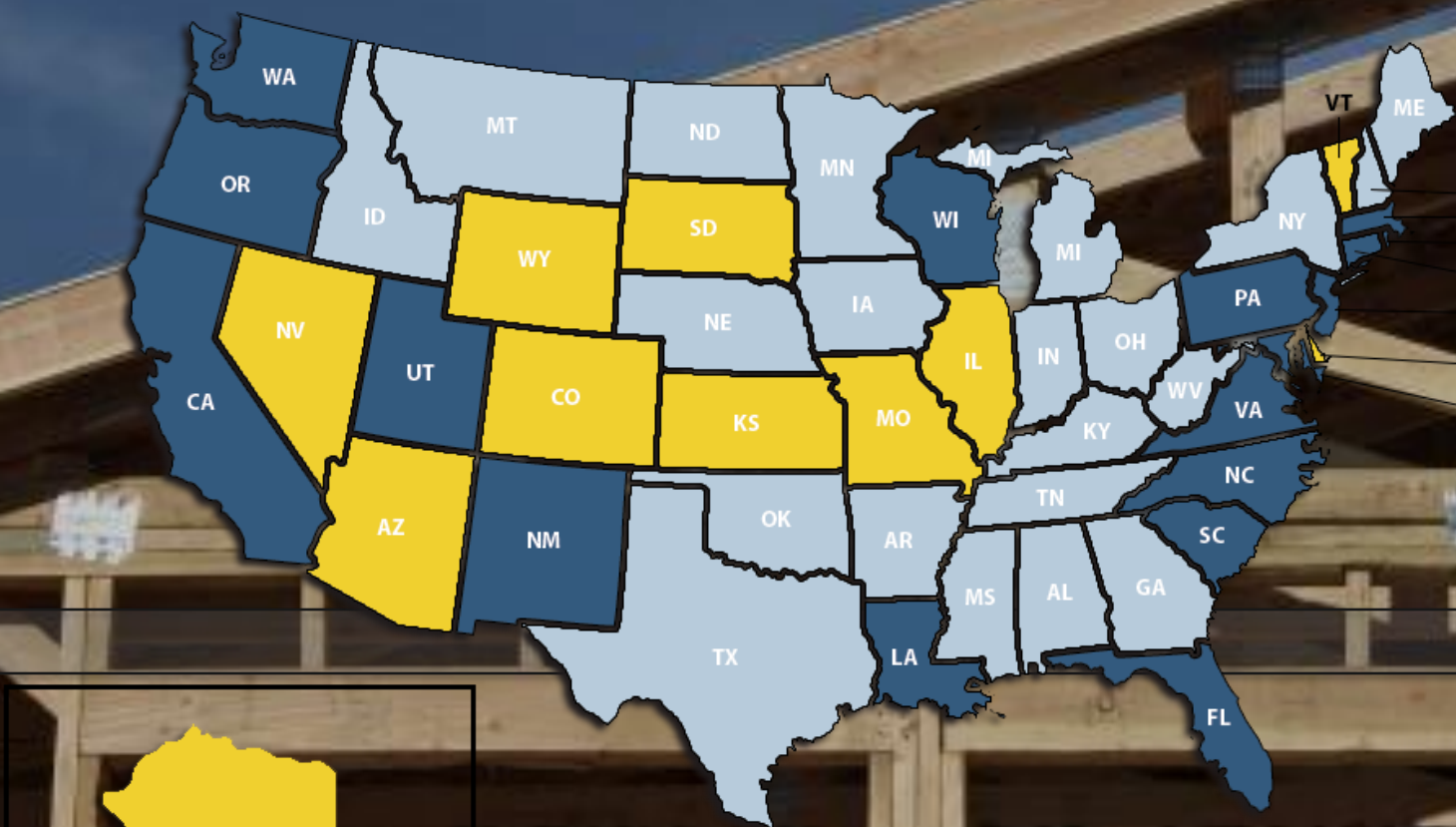
Building codes

CURRENT BUILDING
CODES DO NOT
CONSIDER TORNADOES
EXCEPT FOR CRITICAL
FACILITIES

THEY ARE BASED ON
THUNDERSTORM AND
NON-CONVECTIVE
WINDS

HOWEVER MODERN
CODES CAN REDUCE
TORNADO DAMAGE AND
INCREASE LIFE SAFETY

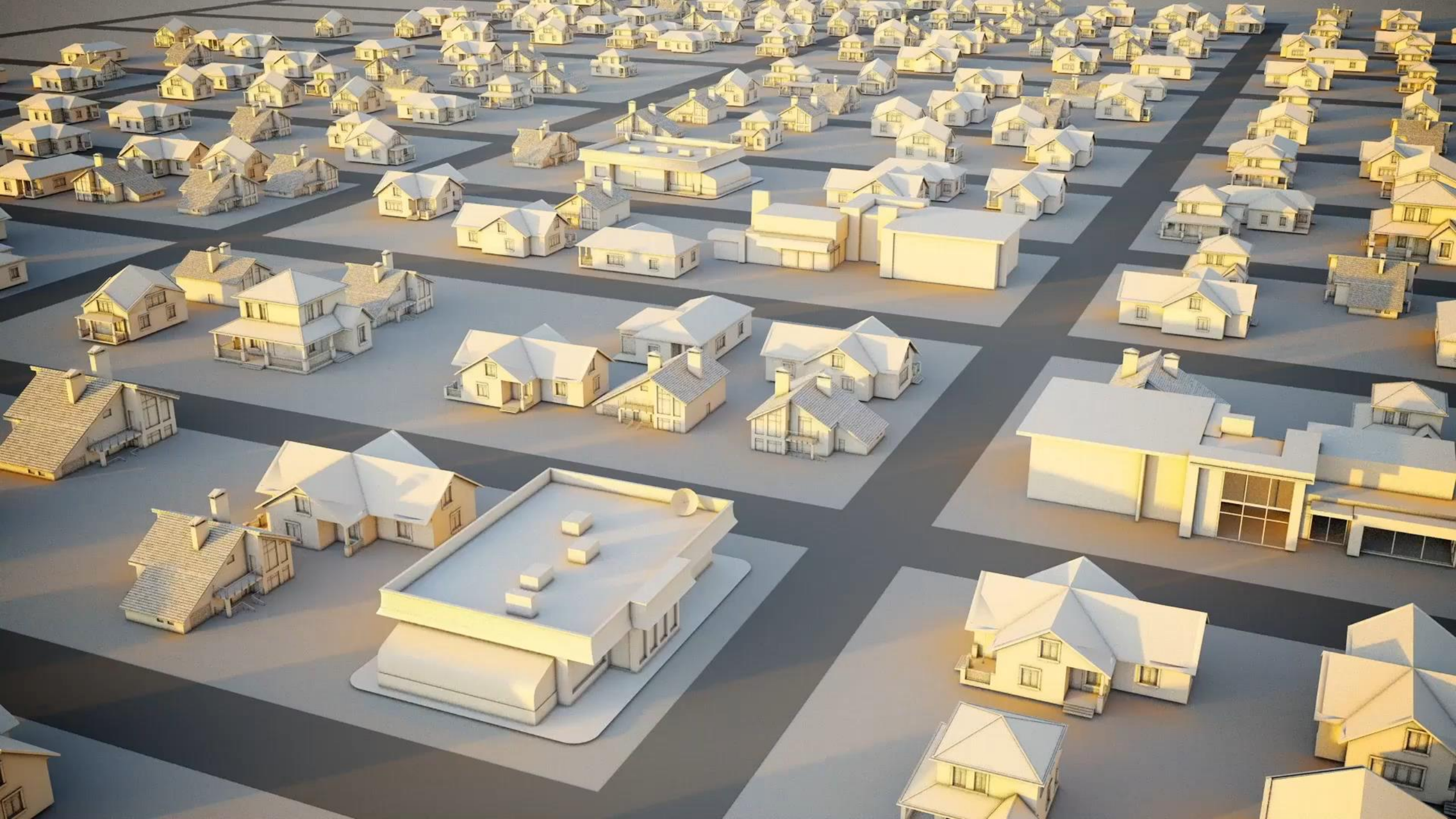




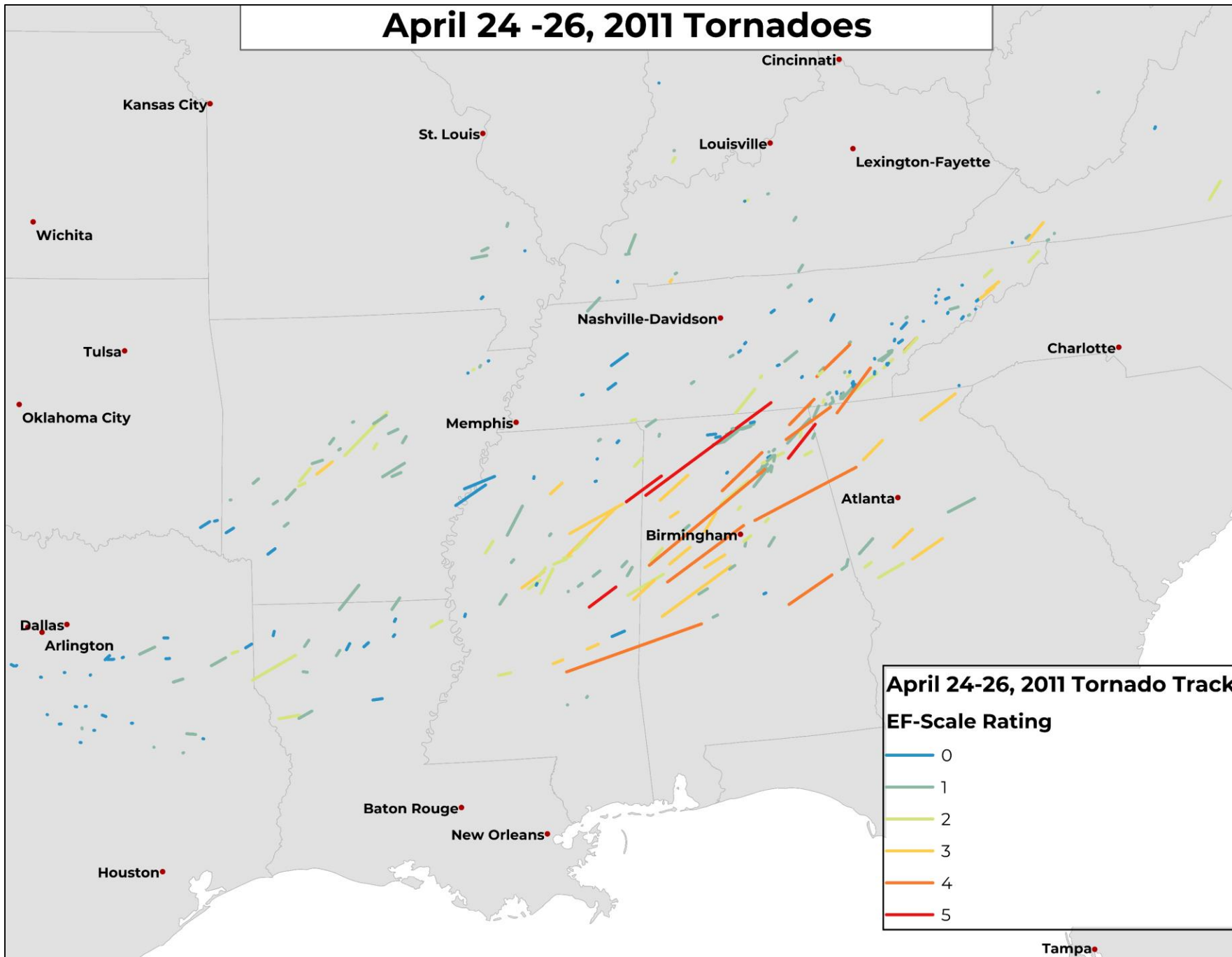
- Enforced state-wide code
- Adopted state-wide code but not required
- No state-wide code



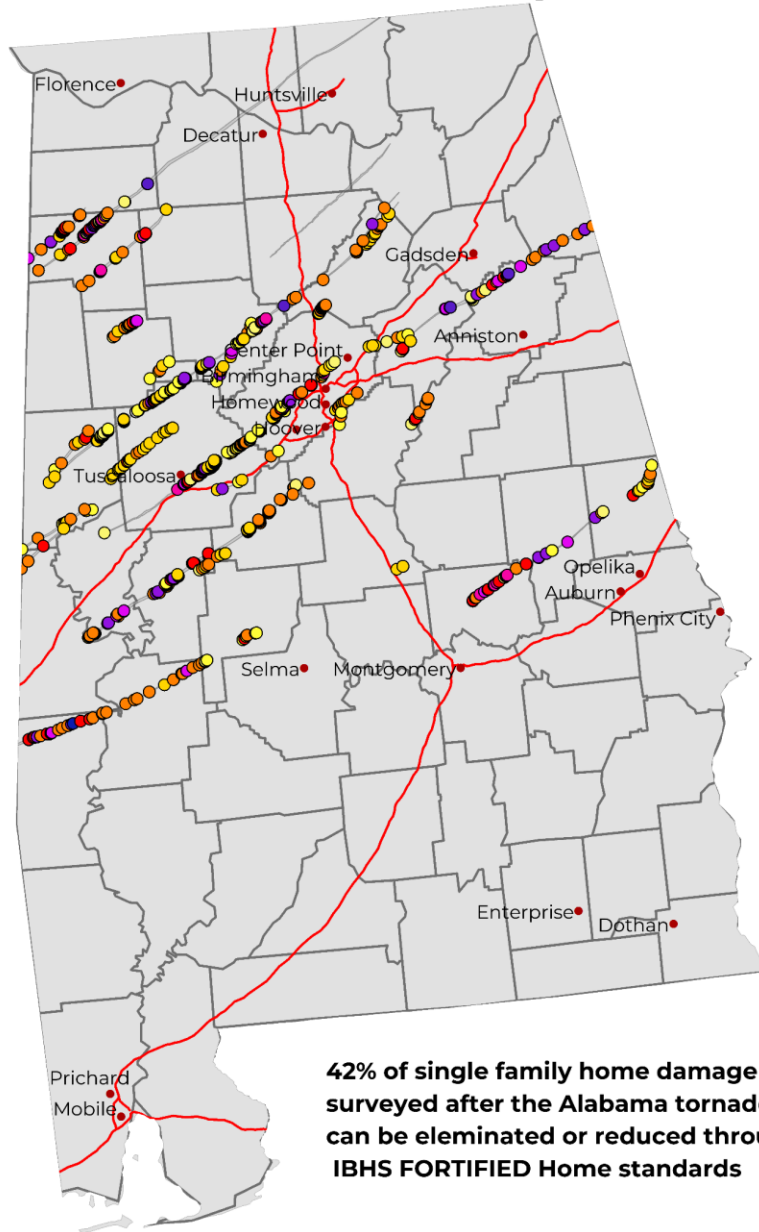
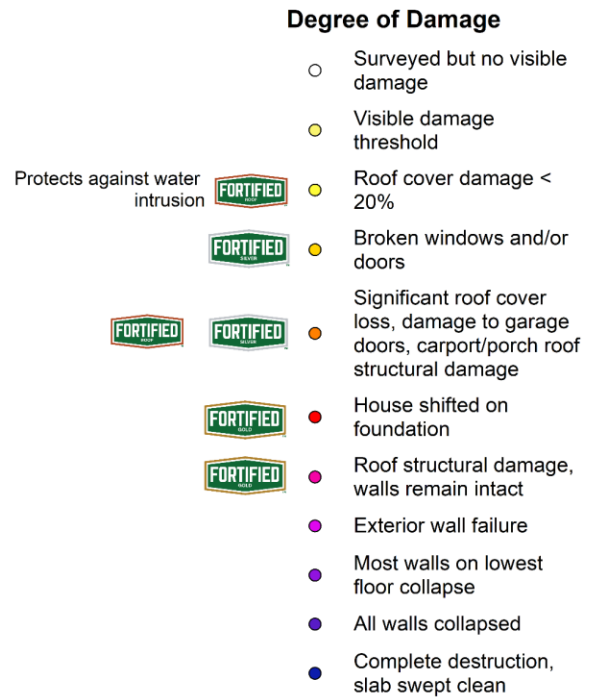
Residential Code: Adoption & Administration



April 24 -26, 2011 Tornadoes



2011 Super Outbreak Alabama Tornadoes of April 26



42% of single family home damage modes / degrees of damage surveyed after the Alabama tornadoes of the Super Outbreak can be eliminated or reduced through IBHS FORTIFIED Home standards

May 20, 2013 Moore, OK Tornado

Total path area: 1.94 square miles

EF-0:

EF-1:

EF-2:

EF-3: 1.48 square miles

EF-4: 0.46 square miles

EF-5: 0.0012 square miles



Damage Survey Locations

EF Rating

▼ EF5

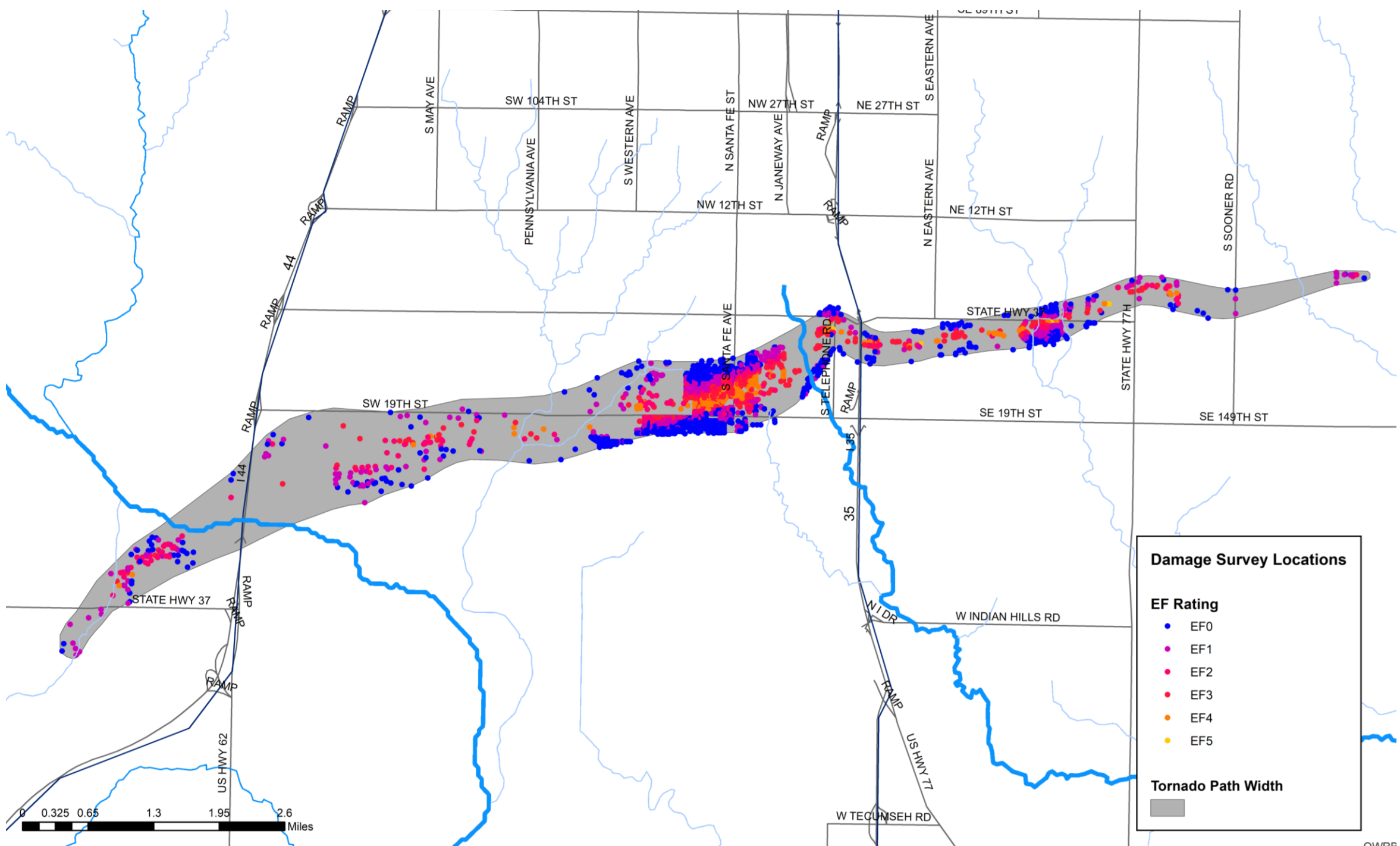
EF Scale Contours

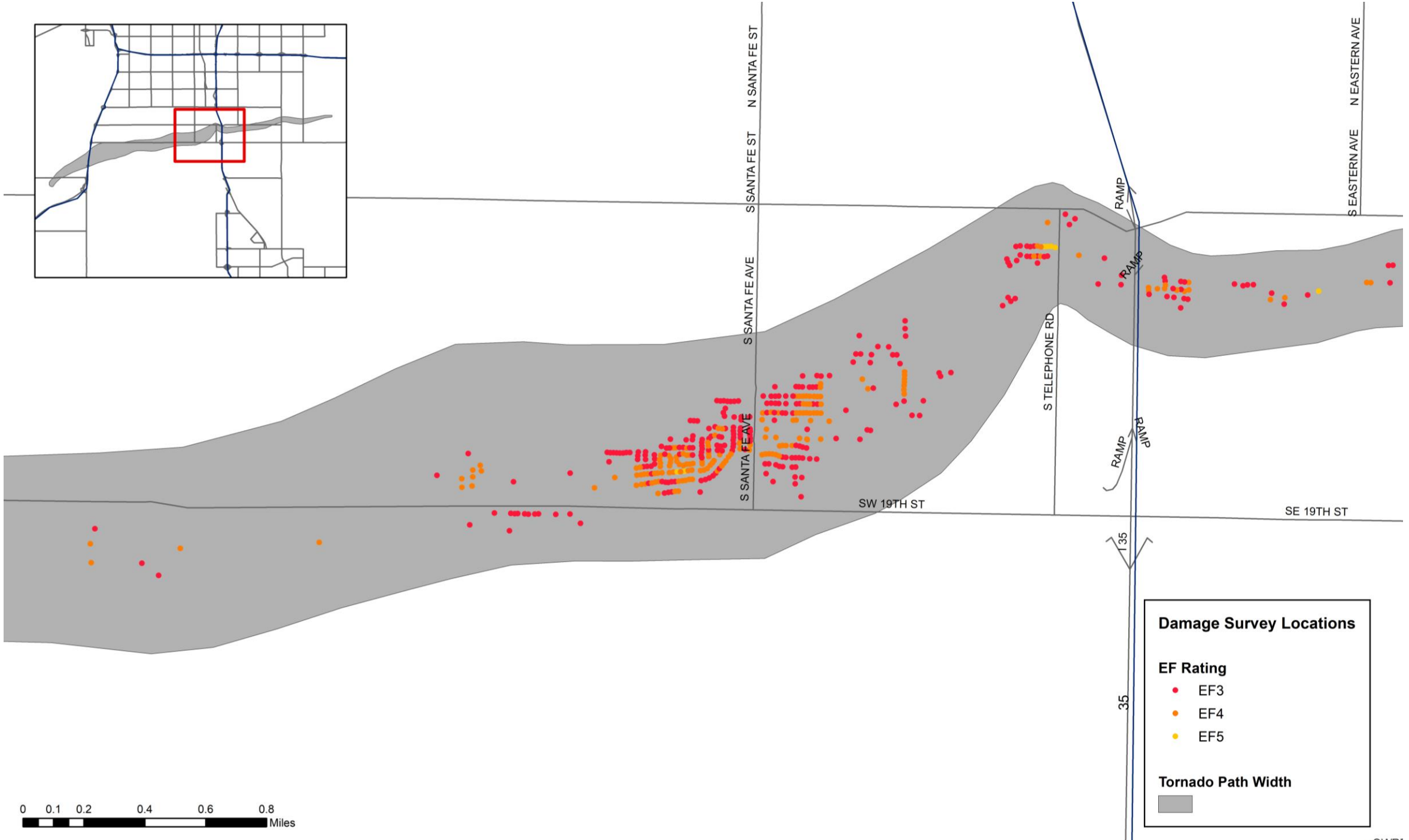


EF-3

EF-4

EF-5





Damage Survey Locations

EF Rating

- EF3
- EF4
- EF5

Tornado Path Width

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