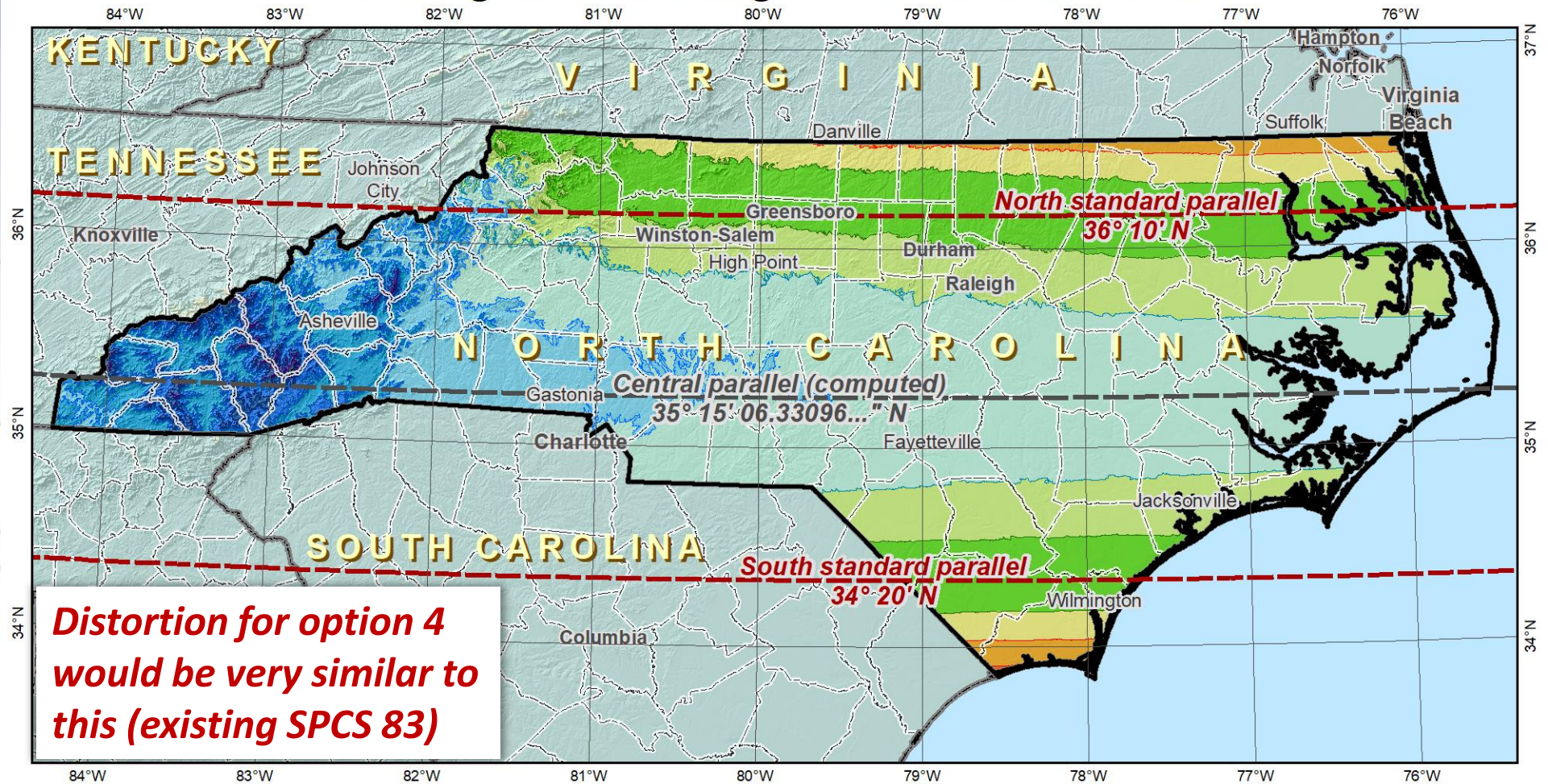


Existing SPCS 83 design: North Carolina Zone



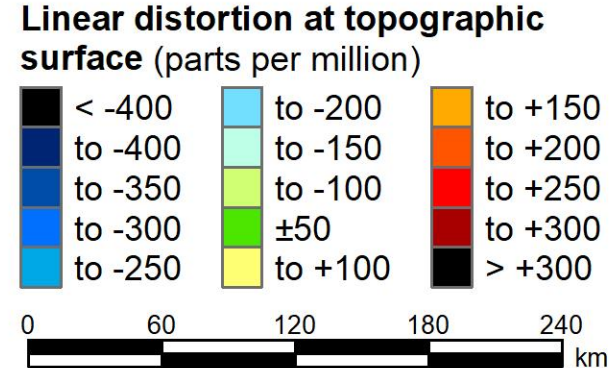
Distortion for option 4 would be very similar to this (existing SPCS 83)

Lambert Conformal Conic projection
North American Datum of 1983

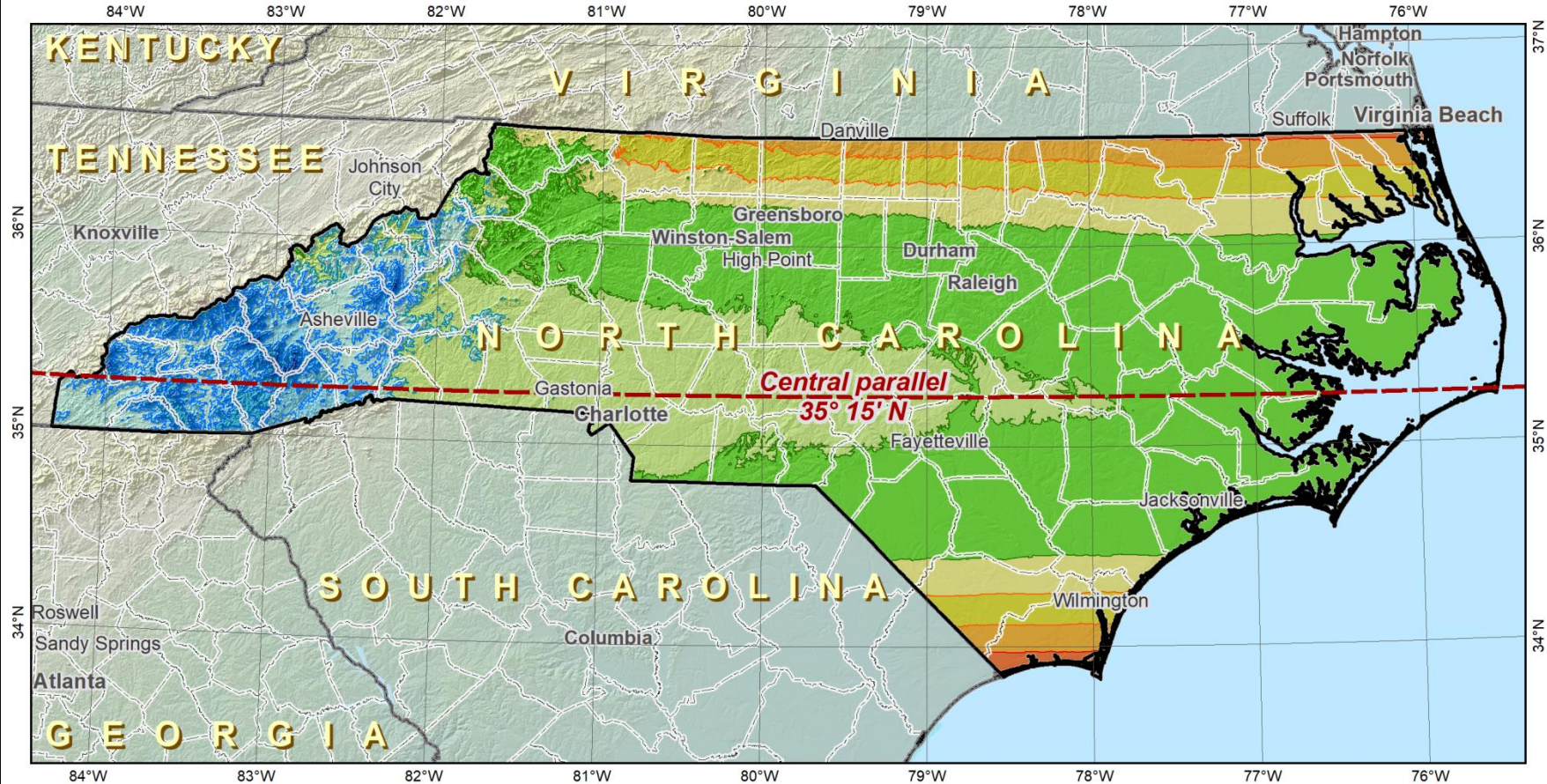
Central parallel: $35^{\circ} 15' 06.3...'' N$
Cen parallel scale: 0.999 872 592...

Areas within ± 100 ppm distortion (± 0.53 ft per mile):
44% of entire zone
42% of all cities and towns
44% of population

Distortion values (ppm)
Entire zone:
Min = -418 Range = 597
Max = +179 Mean = -91
Cities:
Min = -300 Range = 469
Max = +169 Median = -109
Mean = -103
(weighted by population)



Preliminary SPCS2022 default design: North Carolina Zone



Lambert Conformal Conic projection

North American Terrestrial Reference Frame of 2022

Central parallel: 35° 15' N

Central parallel scale: 0.999 95 (exact)



NOAA's
National
Geodetic
Survey

Areas within ±100 ppm distortion

(1:10,000 = ±0.53 ft per mile):

90% of population

78% of all cities and towns

76% of entire zone area

Distortion values (ppm)

Entire zone:

Min = -341 Range = 597

Max = +256 Mean = -14

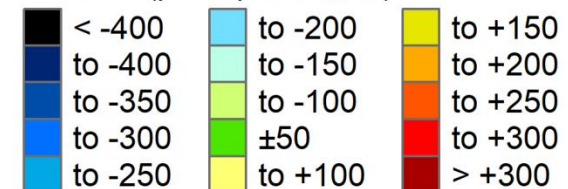
Cities and towns:

Min = -222 Mean = -25

Max = +246 (weighted by

Range = 469 population)

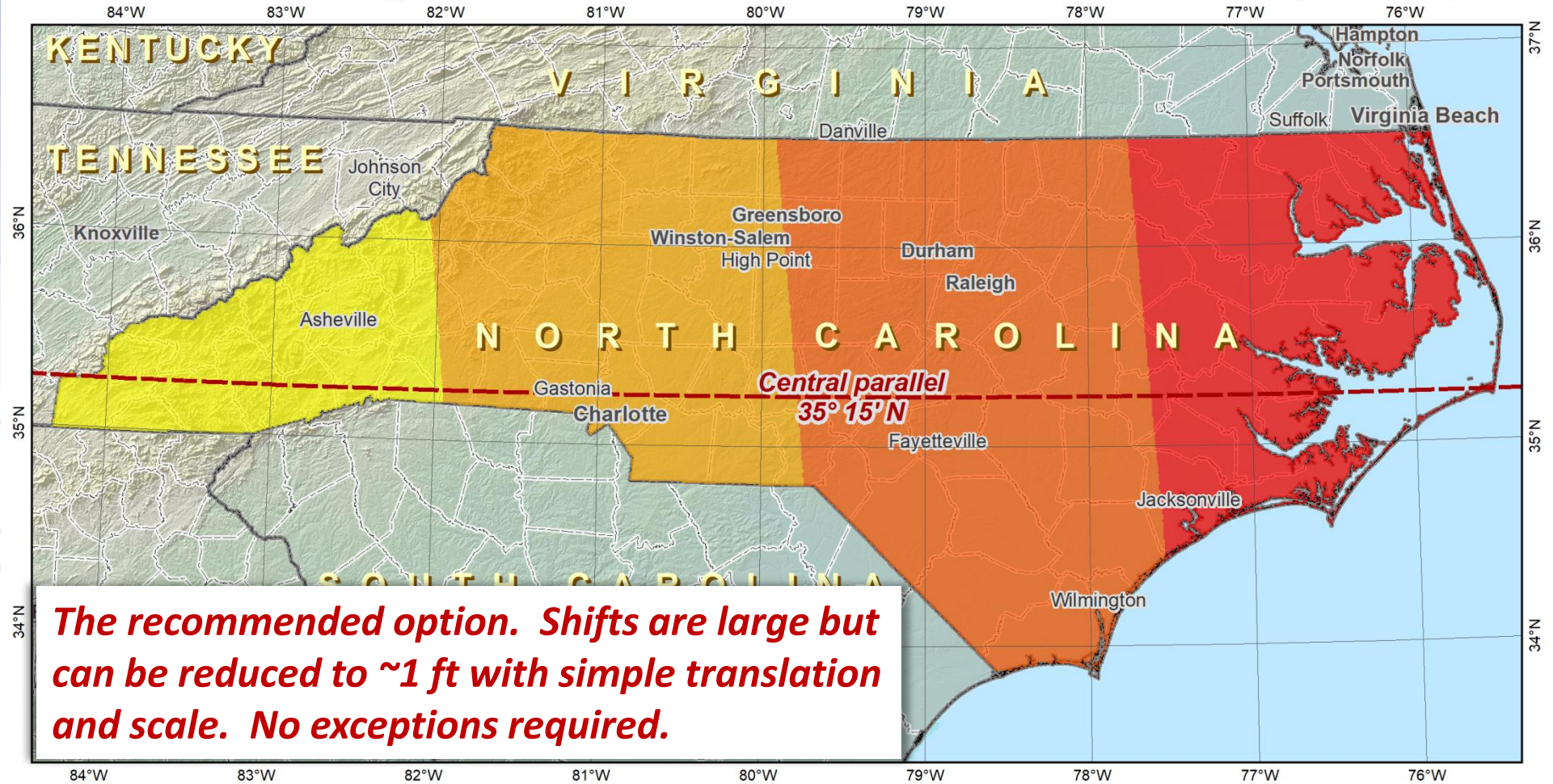
Linear distortion at topographic surface (parts per million)



Created 03/10/2019

Option 2b

Horizontal change in SPCS2022 coordinates for North Carolina (option 2b)



The recommended option. Shifts are large but can be reduced to ~1 ft with simple translation and scale. No exceptions required.

Lambert Conformal Conic projection
 North American Terrestrial Reference Frame of 2022
Central parallel: 35° 15' N
Central parallel scale: 0.999 95 (exact)



Areas within ±100 ppm distortion (1:10,000 = ±0.53 ft per mile):
 90% of population
 78% of all cities and towns
 76% of entire zone area

Option 2b: Reference frame plus parameter change:
 False northing = 200,000 m
 False easting = 1,000,000 m
 (same central meridian as SPCS 83)
Maximum relative change:
Delta north = 77 ft
Delta east = 205 ft

