



Surry – Skiffes Creek – Whealton

Modeling and Alternatives Summary

September 12, 2016

**US Army Corps of
Engineers
Norfolk District
Regulatory Office
Received by: RLS
Date: Sept. 12, 2016**

Proposed Project
Summer 2016

*Surry - Skiffes Creek 500 kV
&
Skiffes Creek -
Wheaton 230kV
&
Skiffes Creek
Switching Station*

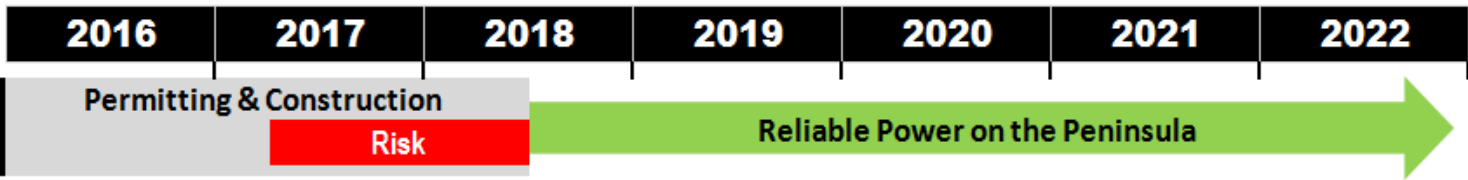
No Violations



**SCC Rebuttal
Testimony 2013**

**REVISED
2016 Load Forecast**

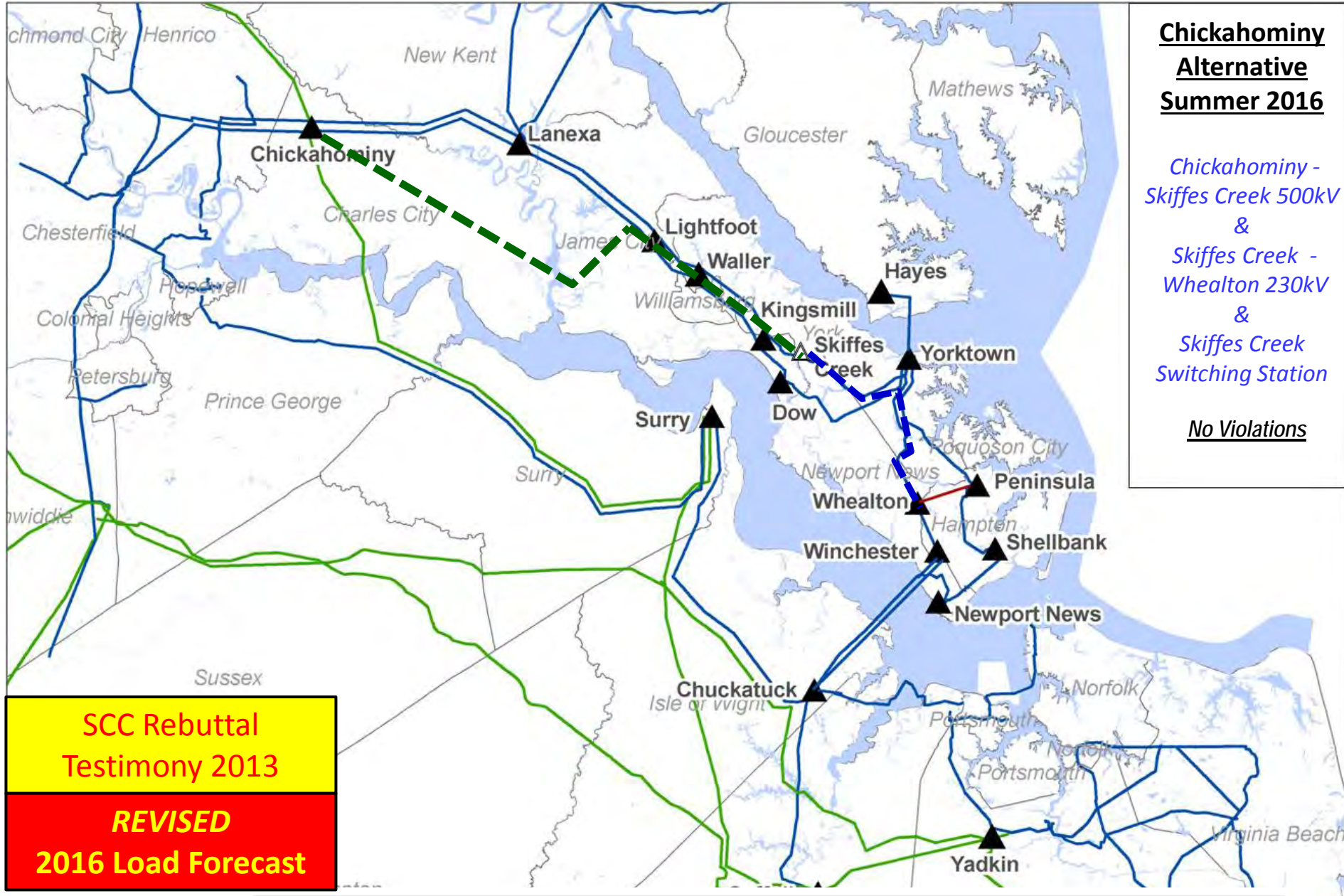
- ✓ **Practicable**
- ✓ **Reasonable**
- ✓ **Prudent & Feasible**



**Chickahominy
Alternative
Summer 2016**

*Chickahominy -
Skiffes Creek 500kV
&
Skiffes Creek -
Wheaton 230kV
&
Skiffes Creek
Switching Station*

No Violations



**SCC Rebuttal
Testimony 2013**

**REVISED
2016 Load Forecast**

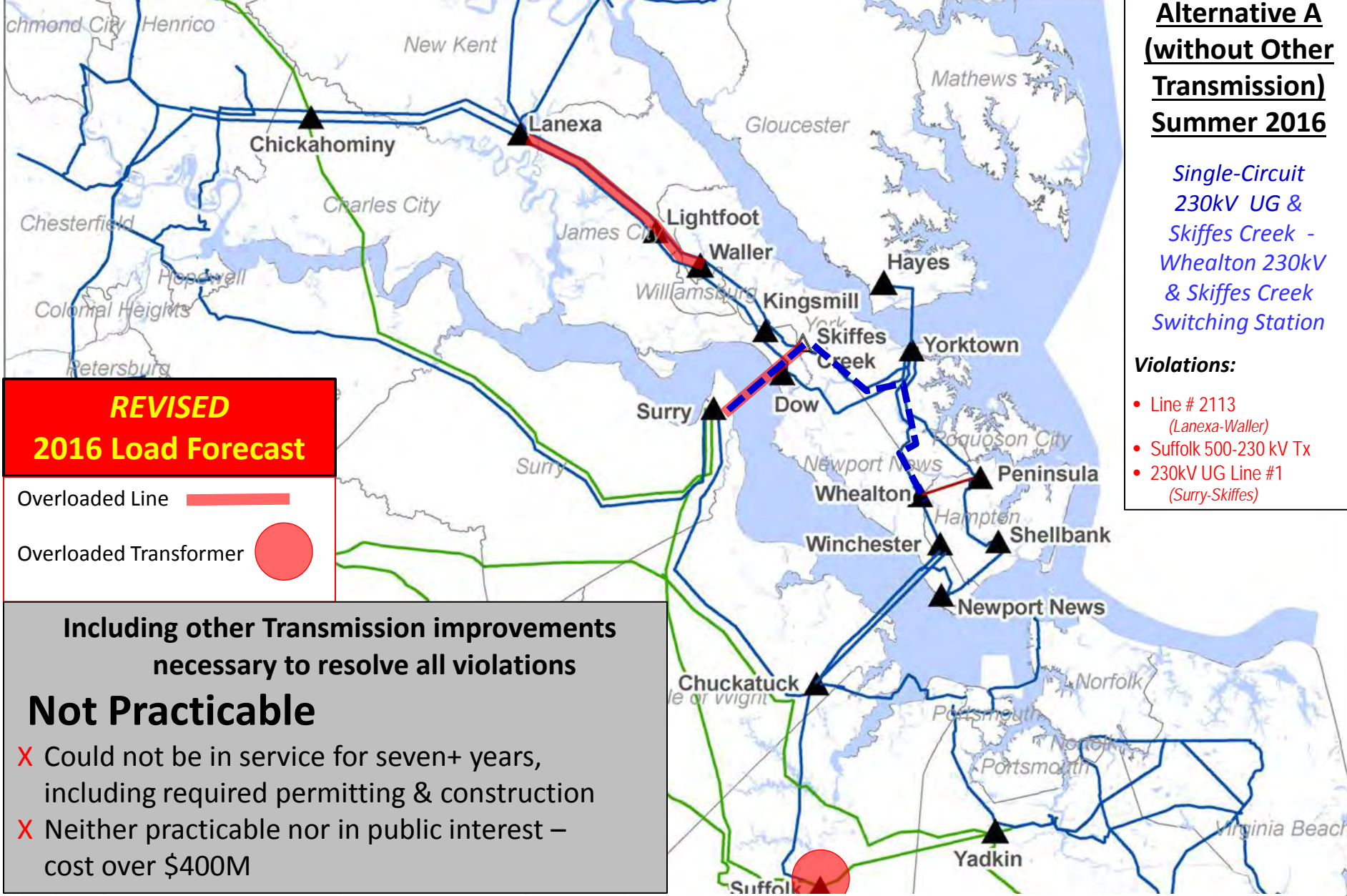


**Alternative A
(without Other
Transmission)
Summer 2016**

Single-Circuit
230kV UG &
Skiffes Creek -
Whealton 230kV
& Skiffes Creek
Switching Station

Violations:

- Line # 2113
(Lanexa-Waller)
- Suffolk 500-230 kV Tx
- 230kV UG Line #1
(Surry-Skiffes)



**REVISED
2016 Load Forecast**

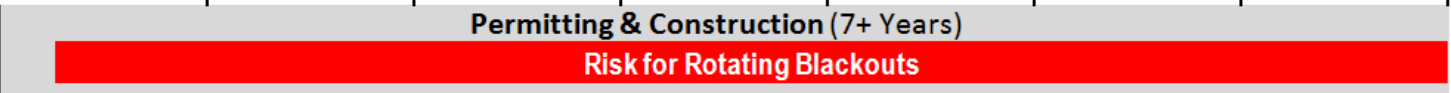
Overloaded Line —
Overloaded Transformer ●

Including other Transmission improvements
necessary to resolve all violations
Not Practicable

- ✗ Could not be in service for seven+ years,
including required permitting & construction
- ✗ Neither practicable nor in public interest –
cost over \$400M



**Alternative A
Plus Transmission**

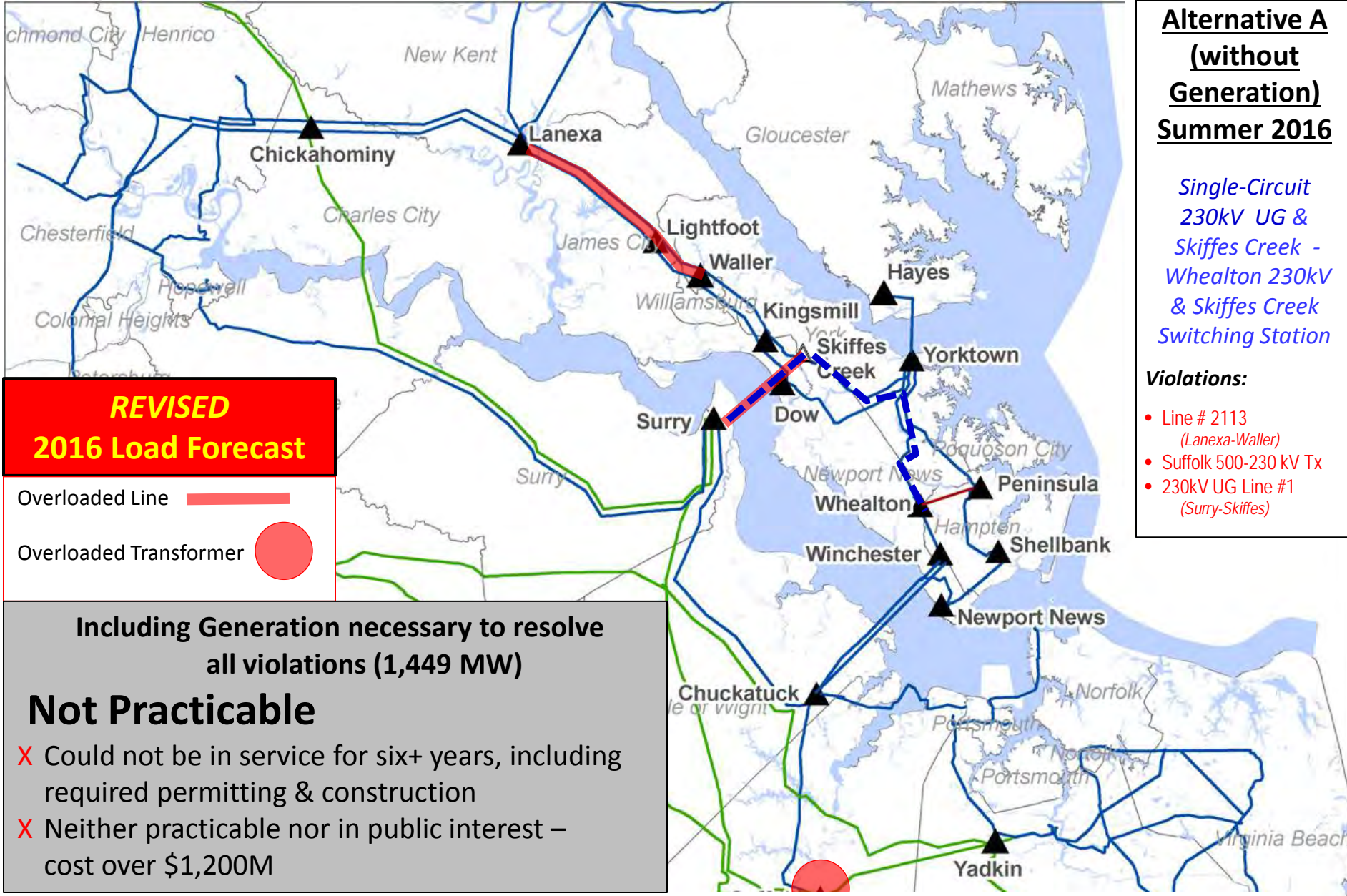


**Alternative A
(without
Generation)
Summer 2016**

*Single-Circuit
230kV UG &
Skiffes Creek -
Wheaton 230kV
& Skiffes Creek
Switching Station*

Violations:

- Line # 2113 (Lanexa-Waller)
- Suffolk 500-230 kV Tx
- 230kV UG Line #1 (Surry-Skiffes)

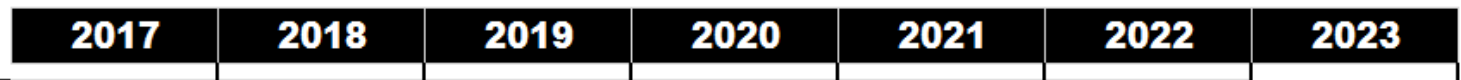


**REVISED
2016 Load Forecast**

Overloaded Line —
Overloaded Transformer ●

**Including Generation necessary to resolve all violations (1,449 MW)
Not Practicable**

- ✗ Could not be in service for six+ years, including required permitting & construction
- ✗ Neither practicable nor in public interest – cost over \$1,200M



**Alternative A
Plus Generation**

Permitting & Construction (6+ Years)

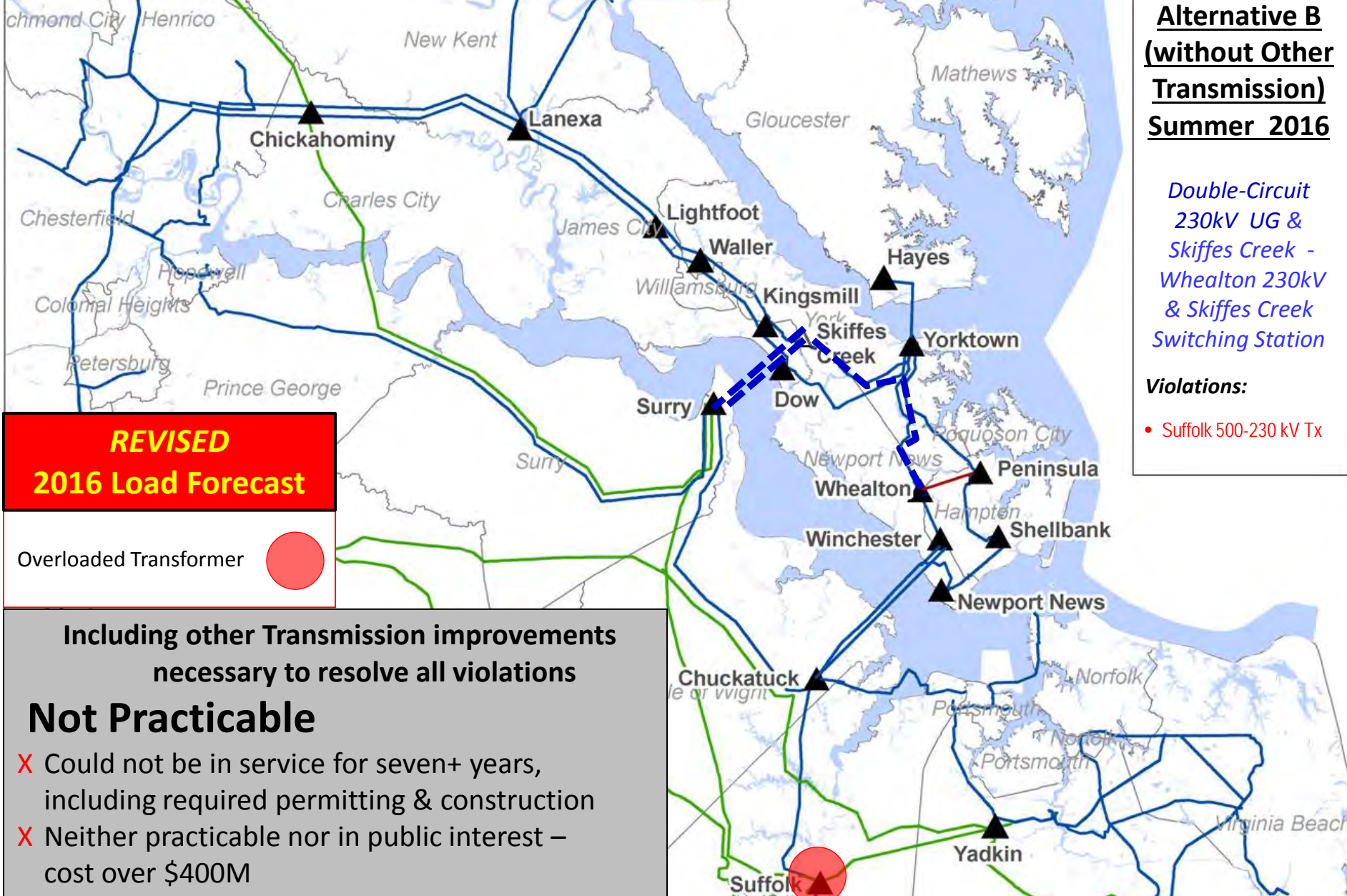
Risk for Rotating Blackouts

**Alternative B
(without Other
Transmission)
Summer 2016**

*Double-Circuit
230kV UG &
Skiffes Creek -
Wheaton 230kV
& Skiffes Creek
Switching Station*

Violations:

- Suffolk 500-230 kV Tx



**REVISED
2016 Load Forecast**

Overloaded Transformer 

**Including other Transmission improvements
necessary to resolve all violations
Not Practicable**

- ✗ Could not be in service for seven+ years, including required permitting & construction
- ✗ Neither practicable nor in public interest – cost over \$400M

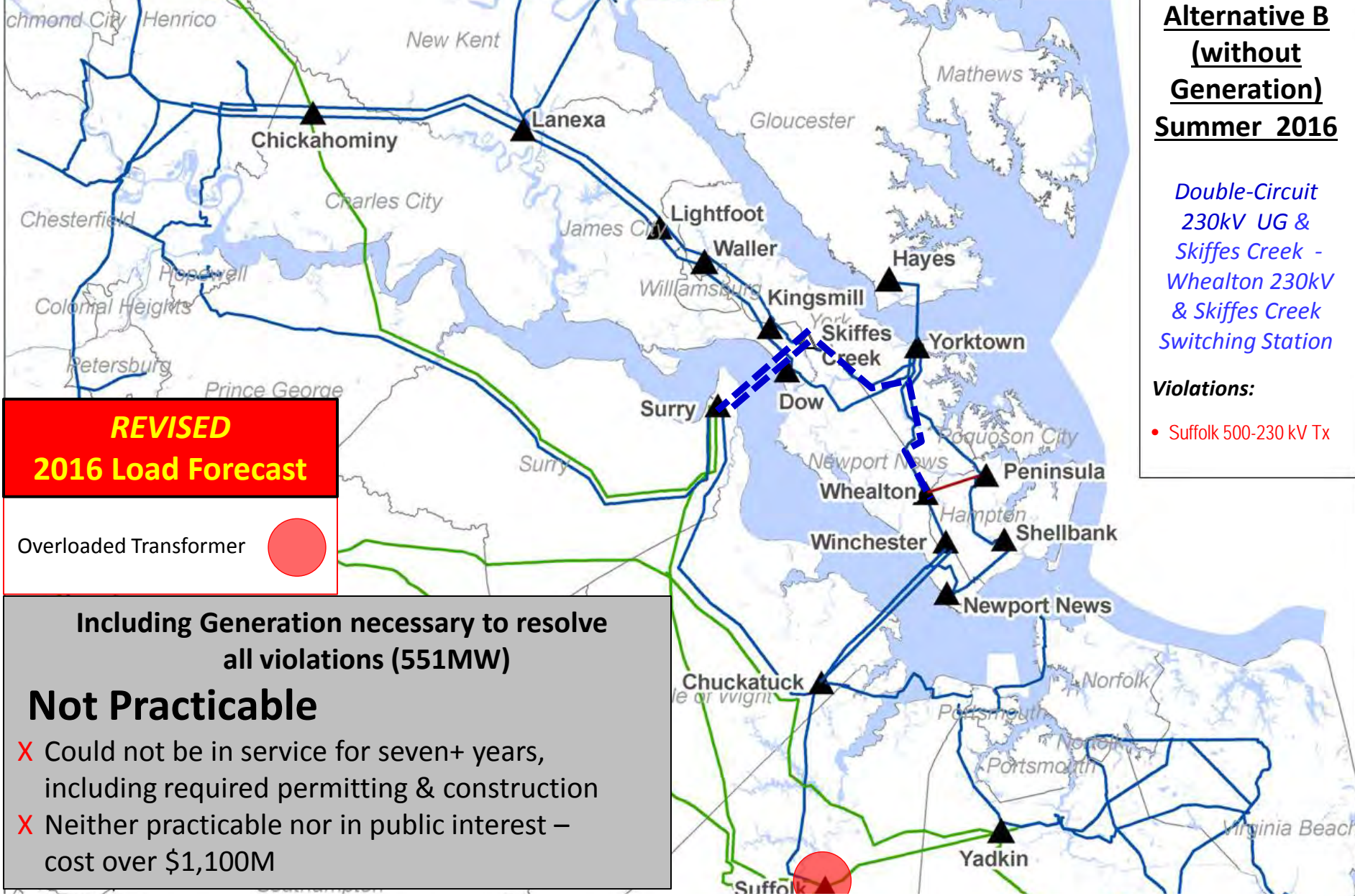


**Alternative B
(without
Generation)
Summer 2016**

*Double-Circuit
230kV UG &
Skiffes Creek -
Wheaton 230kV
& Skiffes Creek
Switching Station*

Violations:

- Suffolk 500-230 kV Tx



**REVISED
2016 Load Forecast**

Overloaded Transformer 

Including Generation necessary to resolve all violations (551MW)

Not Practicable

- X Could not be in service for seven+ years, including required permitting & construction
- X Neither practicable nor in public interest – cost over \$1,100M



**Alternative B
Plus Generation**

Permitting & Construction (7+ Years)

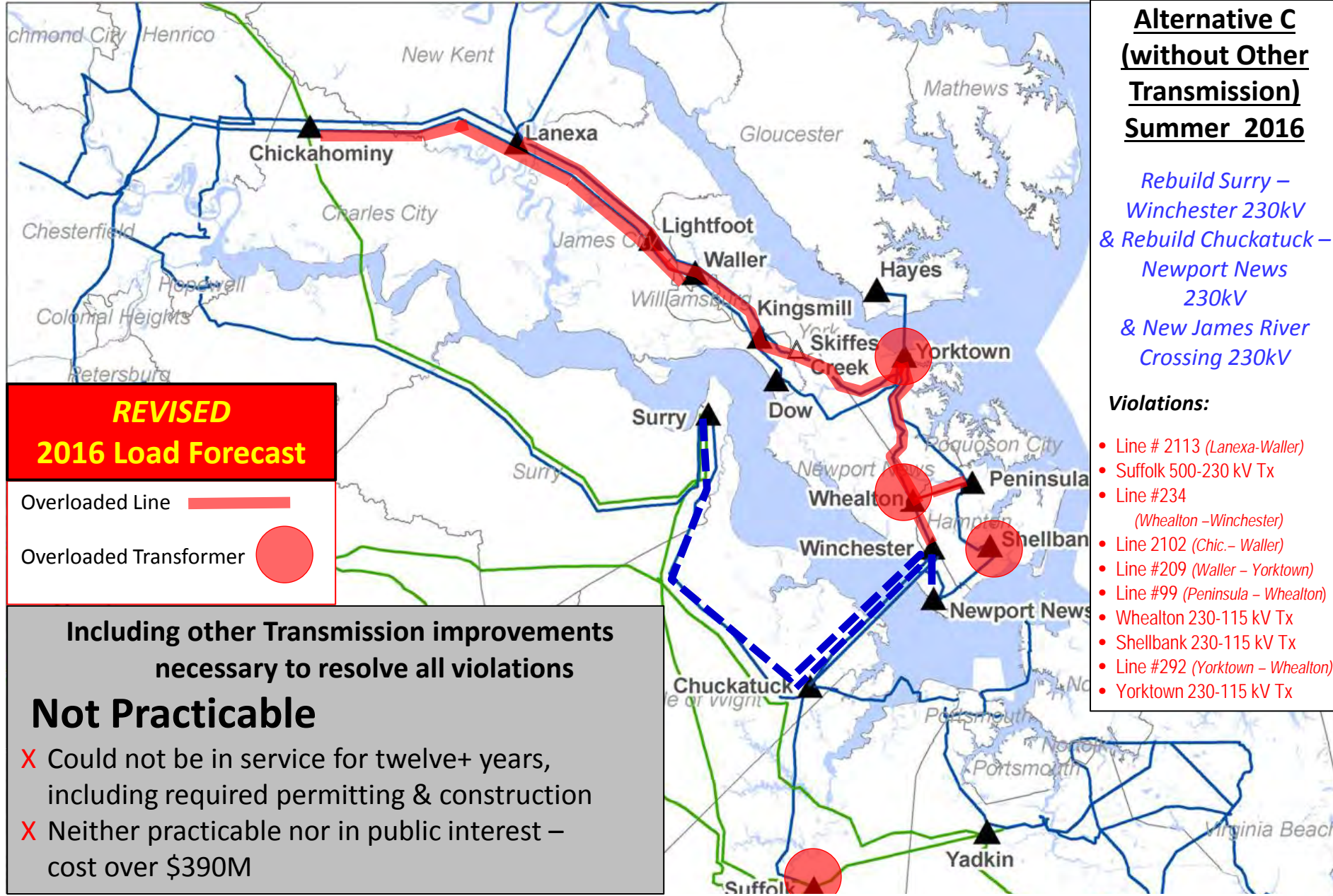
Risk for Rotating Blackouts

**Alternative C
(without Other
Transmission)
Summer 2016**

*Rebuild Surry –
Winchester 230kV
& Rebuild Chuckatuck –
Newport News
230kV
& New James River
Crossing 230kV*

Violations:

- Line # 2113 (Lanexa-Waller)
- Suffolk 500-230 kV Tx
- Line #234
(Wheaton –Winchester)
- Line 2102 (Chic.- Waller)
- Line #209 (Waller – Yorktown)
- Line #99 (Peninsula – Wheaton)
- Wheaton 230-115 kV Tx
- Shellbank 230-115 kV Tx
- Line #292 (Yorktown – Wheaton)
- Yorktown 230-115 kV Tx



**REVISED
2016 Load Forecast**

Overloaded Line —
Overloaded Transformer ●

**Including other Transmission improvements
necessary to resolve all violations
Not Practicable**

✗ Could not be in service for twelve+ years,
including required permitting & construction

✗ Neither practicable nor in public interest –
cost over \$390M



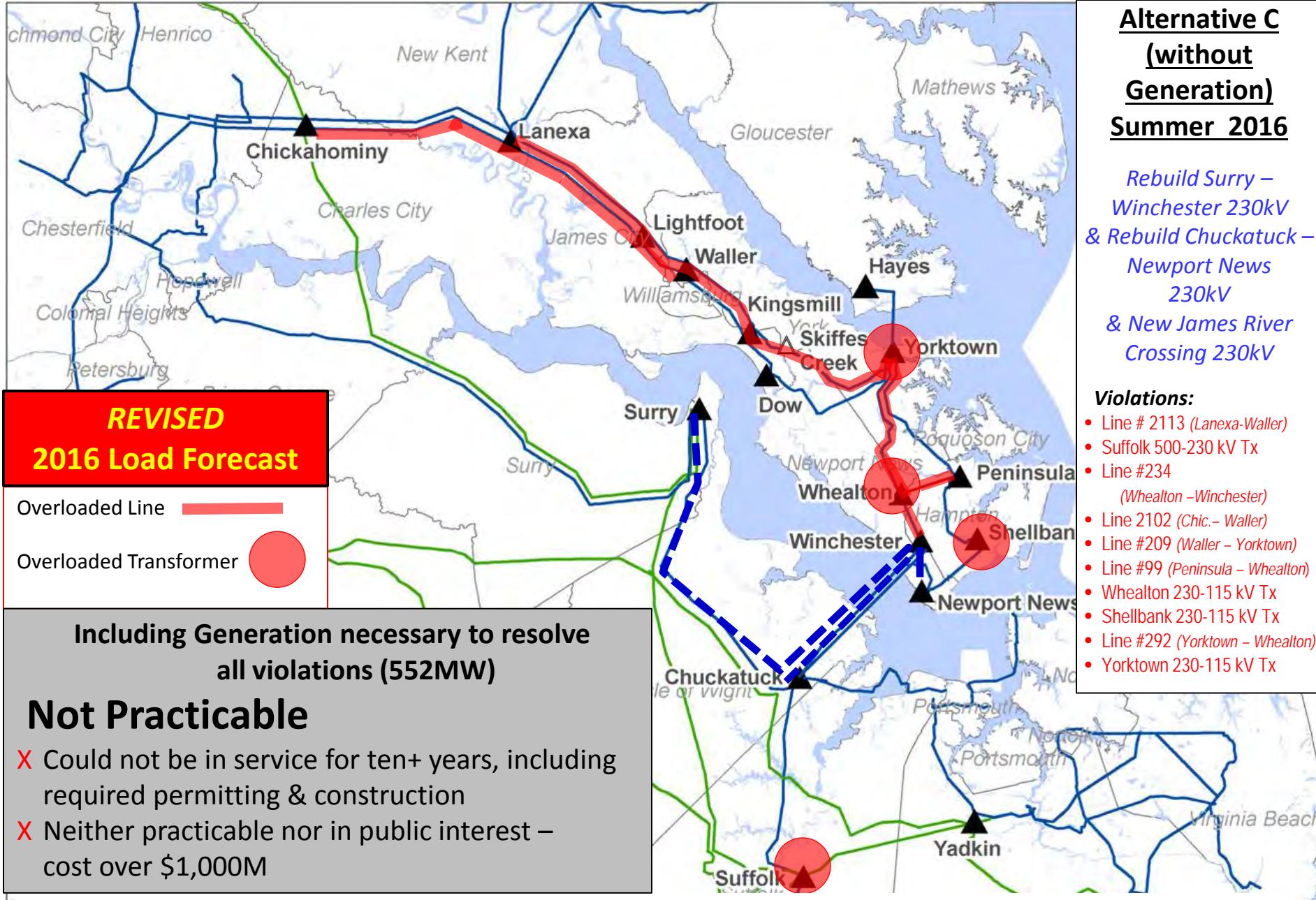
**Alternative C
Plus Transmission**

**Alternative C
(without
Generation)
Summer 2016**

*Rebuild Surry –
Winchester 230kV
& Rebuild Chuckatuck –
Newport News
230kV
& New James River
Crossing 230kV*

Violations:

- Line # 2113 (Lanexa-Waller)
- Suffolk 500-230 kV Tx
- Line #234
(Wheaton –Winchester)
- Line 2102 (Chic.- Waller)
- Line #209 (Waller – Yorktown)
- Line #99 (Peninsula – Wheaton)
- Wheaton 230-115 kV Tx
- Shellbank 230-115 kV Tx
- Line #292 (Yorktown – Wheaton)
- Yorktown 230-115 kV Tx

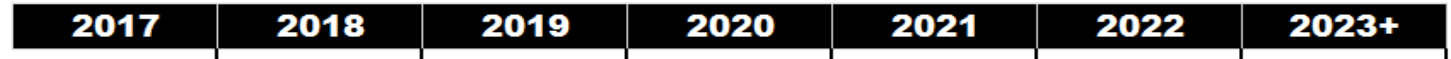


**REVISED
2016 Load Forecast**

Overloaded Line █
Overloaded Transformer ●

**Including Generation necessary to resolve
all violations (552MW)
Not Practicable**

- ✗ Could not be in service for ten+ years, including required permitting & construction
- ✗ Neither practicable nor in public interest – cost over \$1,000M

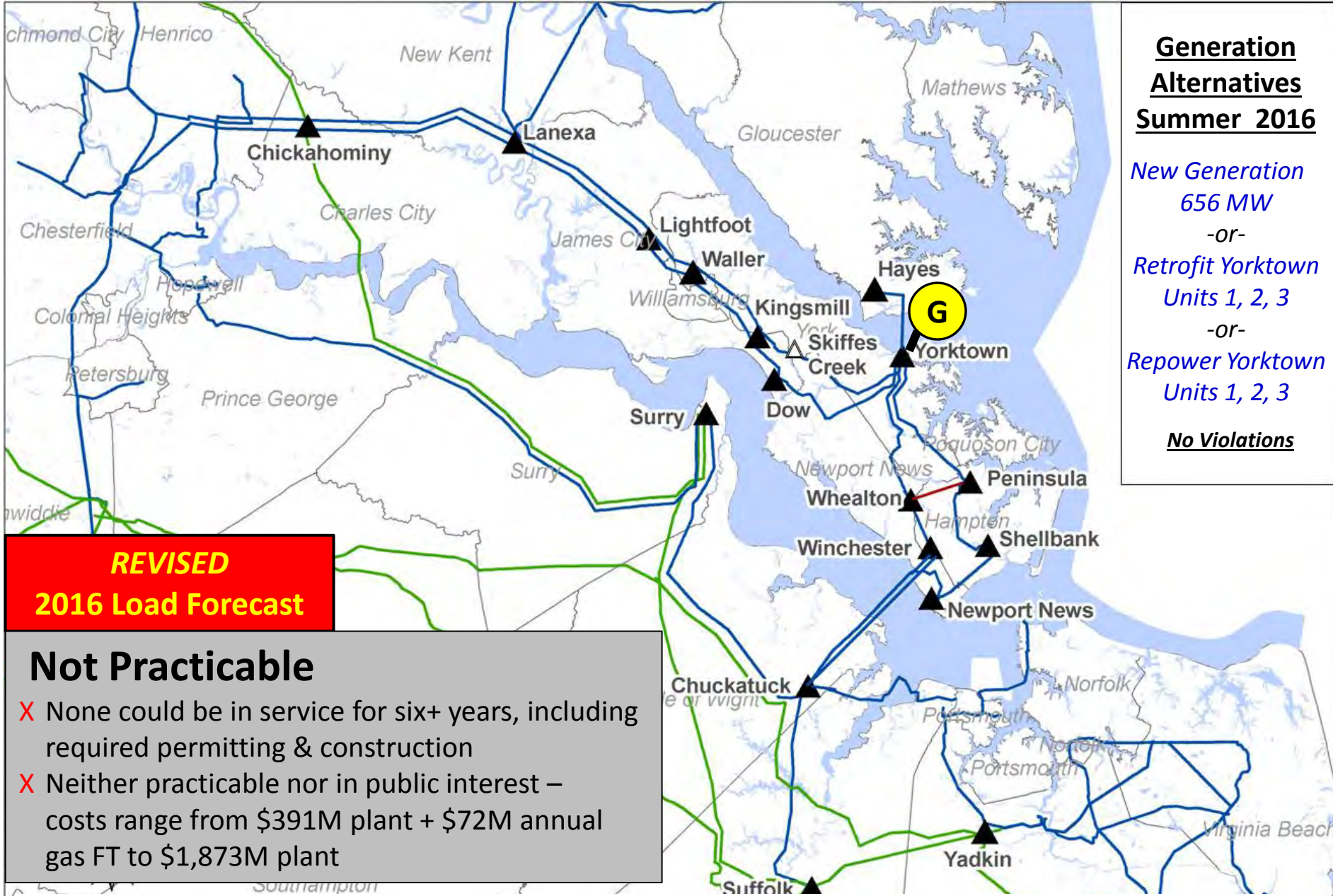


**Alternative C
Plus Generation**



Generation Alternatives
Summer 2016

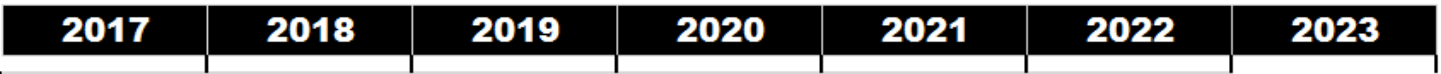
New Generation
656 MW
-or-
Retrofit Yorktown
Units 1, 2, 3
-or-
Repower Yorktown
Units 1, 2, 3
No Violations



REVISED
2016 Load Forecast

Not Practicable

- X None could be in service for six+ years, including required permitting & construction
- X Neither practicable nor in public interest – costs range from \$391M plant + \$72M annual gas FT to \$1,873M plant



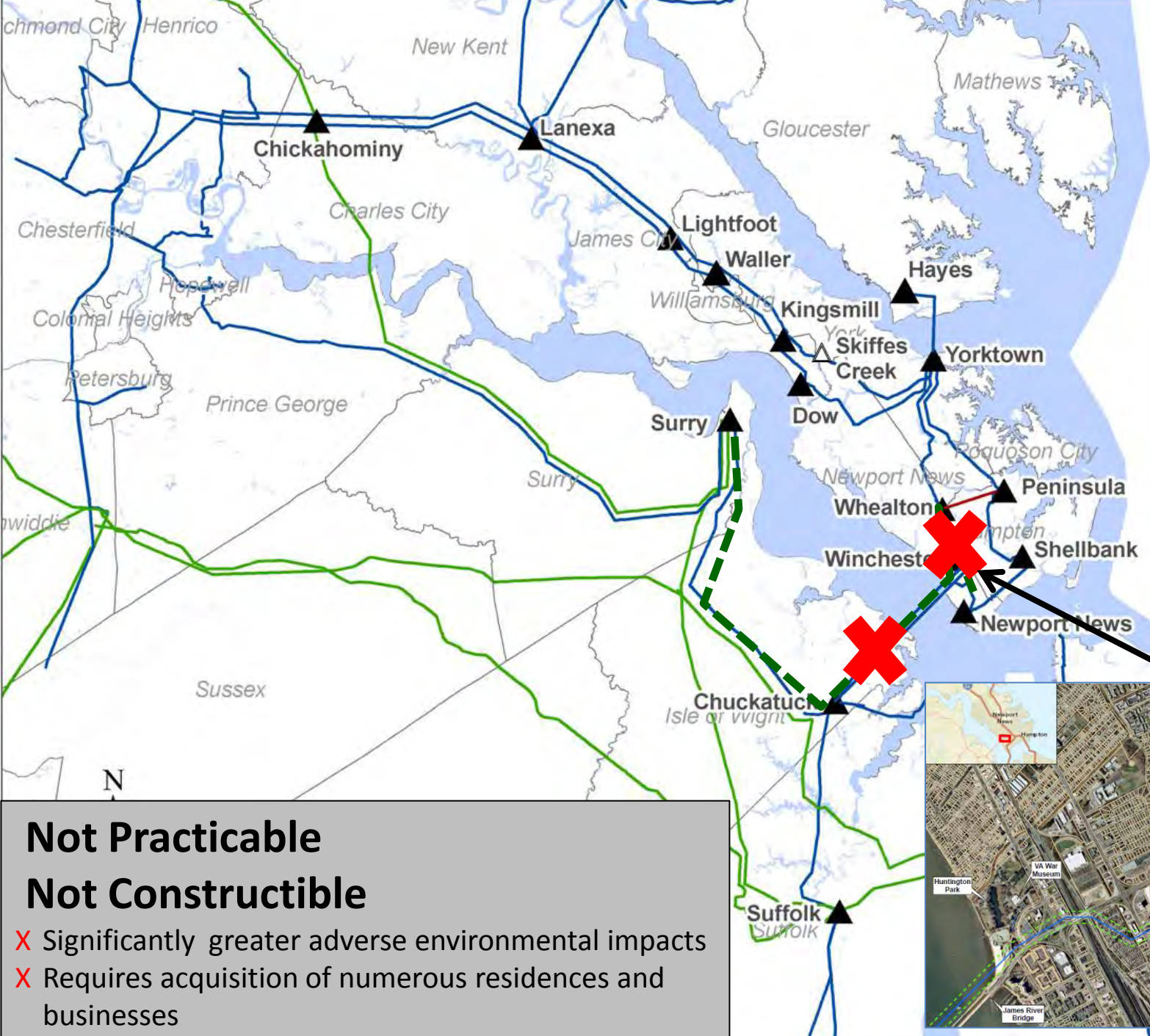
New Generation

**Surry – Whealton
500 kV
Summer 2016**

*Surry - Whealton
500 kV Line*

**Not Practicable
Not Constructible**

**Right of way
easements would
require acquisition
of numerous
residences and
businesses**



**Not Practicable
Not Constructible**

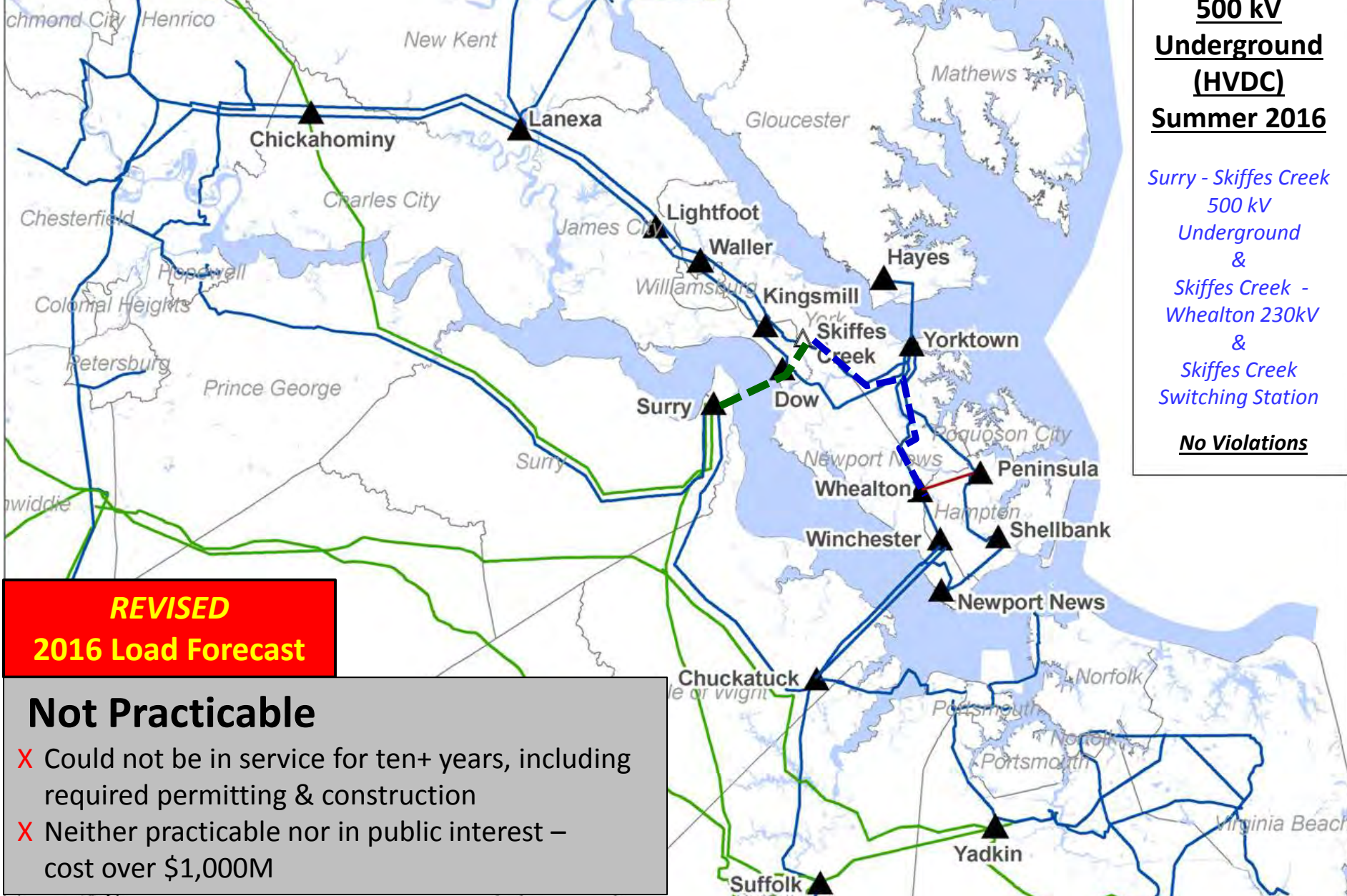
- X Significantly greater adverse environmental impacts
- X Requires acquisition of numerous residences and businesses



**500 kV
Underground
(HVDC)
Summer 2016**

*Surry - Skiffes Creek
500 kV
Underground
&
Skiffes Creek -
Wheaton 230kV
&
Skiffes Creek
Switching Station*

No Violations



**REVISED
2016 Load Forecast**

Not Practicable

- X Could not be in service for ten+ years, including required permitting & construction
- X Neither practicable nor in public interest – cost over \$1,000M

