Circular Logic: Roundabouts vs. Traffic Signals

First Questions: What problem are you trying to solve?

What data do you have?
- Traffic volumes by time of day / day of week
- Crash records – location, type and conditions
- Design Criteria
- Comprehensive Plan
- Funding resources

Then, answer:
- What are you stakeholder needs?
- What are the functional requirements
- What are the design elements
- What are the life cycle costs of operations, maintenance and renewal.

Why use a roundabout (or mini-roundabout)?
- Safety — Roundabouts have been shown to reduce fatal and injury crashes as much as 75 percent. The reduction in crashes is attributed to slower speeds and reduced number of conflict points.
- Low maintenance — Eliminates maintenance and electricity costs associated with traffic signals, which could possibly be as much as $5,000 per year per intersection.
- Reduced delay — By yielding at the entry rather than stopping and waiting for a green light, delay is significantly reduced.
- Capacity — Intersections with high volumes of left turns are often better handled by a roundabout than a multiphased traffic signal.
- Environmental — A reduction in delay corresponds to a decrease in fuel consumption and air pollution.
- Aesthetics — The central island provides an opportunity to beautify the intersection with landscaping.

Drawbacks?
- High volume directional arterial roads
- Stormwater design implications
- Traffic signal operations for volume/movements (w/ performance measures) more effective.
- Longer pedestrians path and different use of right-of-way.

Resources:
- VDOT: http://www.virginiadot.org/info/faq-roundabouts.asp (in 2016, 179 operational and 90 planned)
- FHWA: https://safety.fhwa.dot.gov/intersection/innovative/roundabouts/
- Carmel,IN: http://www.carmel.in.gov/department-services/engineering/roundabouts
Example Right of Way Requirements

LEGEND

- **Red**: Area required for roundabout but not for signal
- **Blue**: Area required for signal but not for roundabout