The Center for Cleveland

Red Line Realignment:
A New Subway Plan for Downtown Cleveland

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A realignment of the RTA Red Line between Tower City and East 34 St. to provide three Downtown subway stations would transform Cleveland—not just Downtown, but the entire city and region. With infrastructure a key priority of the Biden administration and with over $4 trillion aimed at economic recovery, the opportunity for construction of the subway is more achievable now than at any time in decades. The project would help the city resume its trajectory of economic and population growth and regain its global significance.

About the Author

Mark Zannoni is a Cleveland-based global thought leader on smart cities, urban transportation, and digital transformation, with perspectives and insight gained from projects and clients in Africa, Asia, Europe, the Middle East and across the United States. He covers a range of transportation modes and issues and urban development matters from the perspective of emerging technologies and innovation, economic development, market competitiveness, strategy, equity, operations and efficiency, and passenger/resident experience. An expert on Cleveland, Zannoni is a certified urban planner and is board president of The Center for Cleveland.

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About the Center for Cleveland

The Center for Cleveland is a non-profit, nonpartisan economic development organization focused on achieving economic and population growth in the City of Cleveland and region in pursuit of positive social, financial, economic, public health, public safety, transportation, educational, environmental, and equitable outcomes. The Center was formed to promote, develop thought leadership on, advocate for, and pursue opportunities for Cleveland for economic and population growth. The Center maintains comprehensive information on the city aimed at global business attraction as well as updated data on current and planned development projects in the city. More information can be found at: www.centerforcleveland.org.

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1. Introduction

A 1.7-mile realignment of the RTA Red Line between Public Square and East 34 St. to provide three new downtown subway stations, a relatively inexpensive investment that could leverage upcoming federal infrastructure stimulus funds, will yield long-term economic benefits and will transform the City of Cleveland and region for decades. This document presents a new alignment as opposed to Downtown subway alignments presented previously.

With infrastructure a key priority of the Biden administration to rebuild U.S. competitiveness and stimulate the post-Covid pandemic economy, the timing is perfect to fund this project and return Cleveland to a trajectory of economic and population growth.

The subway will not only enable, but also induce economic activity and growth. The subway will allow for increased density, better uses of constrained land, increased property values, stronger demand for real estate near stations, a deeper talent pool for companies regionwide, and higher income and property tax revenues for local governments and school districts.

Continual rejection since the 1950s of a Downtown Cleveland subway—despite Cuyahoga voters passing a bond issue for one in 1953—has limited development and contributed to continual population decline, reduction of the city's economic relevancy and global stature, and decrease of the region's economic competitiveness. *There is certainly a cost of not building the subway.*

2. Context

The recently announced $512 million of federal funds allocated to the City of Cleveland as part of Covid recovery funding and the additional forthcoming infrastructure stimulus funds should be used for something transformative in the city that will boost economic opportunity, improve equity, foster employment and population growth, increase the city's economic competitiveness, and ultimately, bring an enhanced quality of life.

With its Red Line Rapid Transit, Cleveland is one of only 12 U.S. cities with heavy rail, which is the durable rail mode of choice of major cities including New York, Chicago, London and Tokyo.[1] Many cities worldwide have light rail, represented in Cleveland by the Shaker and Waterfront Lines. Despite the prestige associated with a heavy rail system, Cleveland has only one Downtown station, limiting its use and practicality. While passengers could alight a train at Tower City and then walk or transfer to a bus—including a bus branded as a "trolley" or "bus rapid transit" —or use some other mode to reach their final destinations, many with options simply choose not to do so. They skip using transit altogether.

Typically, rail transit lines are developed to connect nodes of activity or neighborhoods or future nodes and neighborhoods along their routes. But with the sole exception being Hopkins Airport Station, the Red Line was built where it is today only because there was an existing railway right-of-way along national railroad routes. For most residents, the Red Line Rapid[2] is not within walking distance; one must take a bus or drive to it and park or be dropped off, meaning, unless the Downtown destination is very close to Public Square, a single one-way trip would require three modes: car or bus, then rapid, then bus/car/walking/bicycle/scooter. The third leg is one too many, especially in

1. The 12 US cities with heavy rail are: Cleveland, New York, Washington, Baltimore, Philadelphia, Boston, Chicago, San Francisco, Los Angeles, Atlanta, Miami, and San Juan.
2. Note for non-Cleveland readers: In Cleveland, the rail system—both the heavy rail (rapid transit) and light rail networks—is referred to as "the rapid" or "rapid transit."

inclement weather. Also, trips within the city's economic core via the rapid are generally not possible at all. A simple 1.7-mile realignment of the Red Line with three new stations would bring profound mobility benefits to residents (in addition to the economic gains).

Like other major U.S. cities, Covid has wreaked a human, social and economic toll on Cleveland. But the potential to receive considerable stimulus funds, courtesy of the Biden administration, presents a unique and critical opportunity for the city—not just to "jump start" the economy post-pandemic, but to invest in a true, meaningful infrastructure project that will have a profound transformative impact on the city and region.

As evidence of the Biden administration's desire for long-term benefits to society, projects to be funded are to be "shovel-worthy," but not necessarily "shovel-ready." Previous stimulus rounds sought shovel-ready projects for the quick impact of federal spending. But this round is seeking longer-term, transformative benefits to keep cities and the country as a whole competitive.

3. Route Description and System Benefits

The Red Line Realignment project adds three new stations Downtown along a 1.7-mile route at E. 9 and Prospect, at E. 17 and Euclid, and at E. 22 and Community College Ave. with an alignment running as a subway beneath Huron

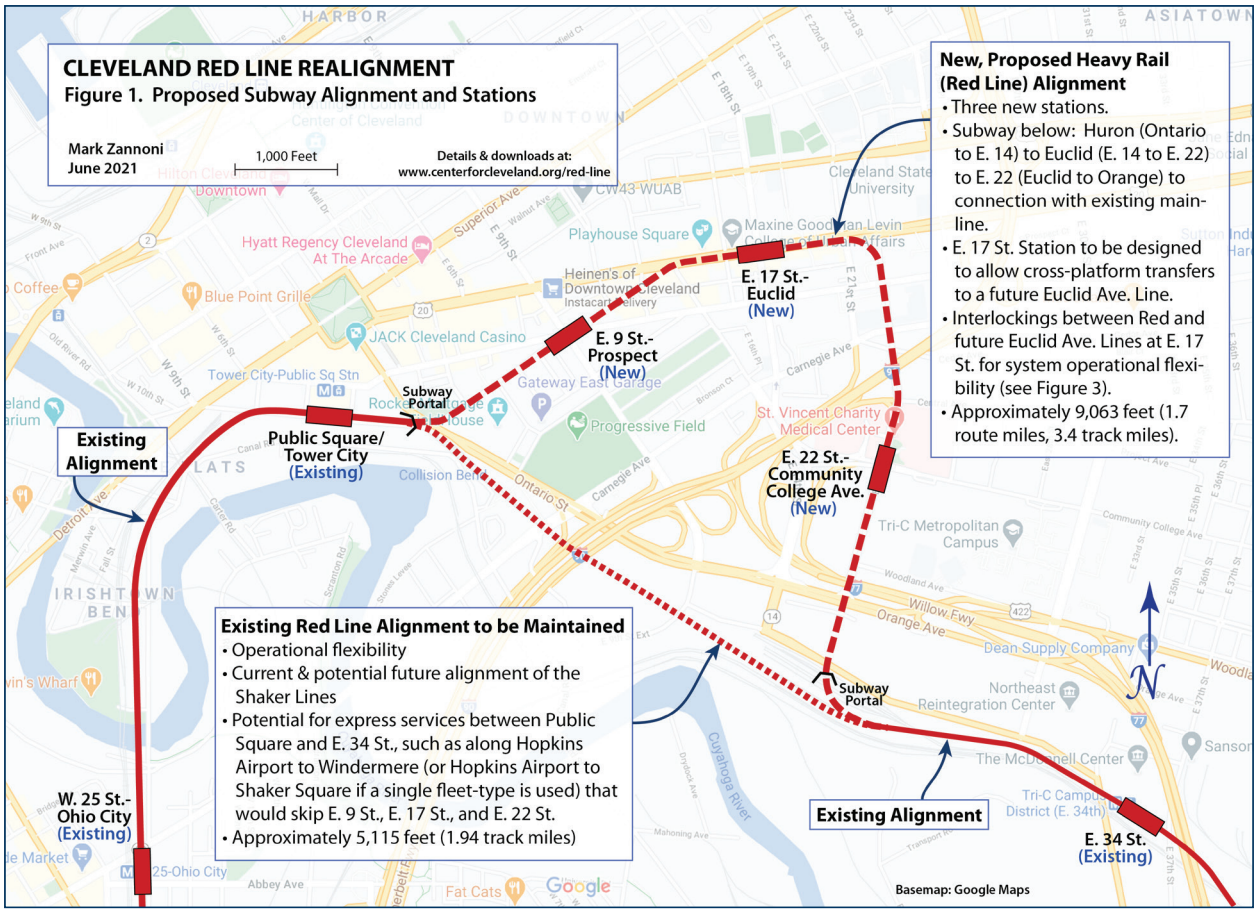


Figure 1. Proposed subway alignment with three new stations. A single-page pdf version of this diagram can be downloaded at www.centerforcleveland.org/red-line.

between Ontario and E. 14, beneath Euclid between E. 14 and E. 22, and beneath E. 22 between Euclid and Orange Avenues. (See Figure 1, on the previous page.)

While these stations cover only a part of Downtown, it is a substantial and cost-effective improvement over the existing one-station system, not counting the Waterfront Line in the Flats and the northern edge of Downtown. For many commuters who work Downtown, the Rapid is not considered a practical option as Tower City is too far from their final destination, especially in poor weather. But with stations closer to destinations, the Rapid becomes a practical option. Figure 2, below, presents an approximately five-minute walk from each station as the crow flies.

Benefits to the City and Region

The new subway line will have profound benefits to the City, many of which are compounded off each other:

1. Savings for commuters who can save on fuel, parking, and car usage/ownership costs and savings for businesses who build or offer paid parking to employees.
2. Decreased demand for parking, meaning land can be better utilized for other uses, such as parks, hotels, offices, and residences; better designed, utilized, and revenue-efficient projects will be built as the city could loosen regulations around parking minimums for real estate projects.

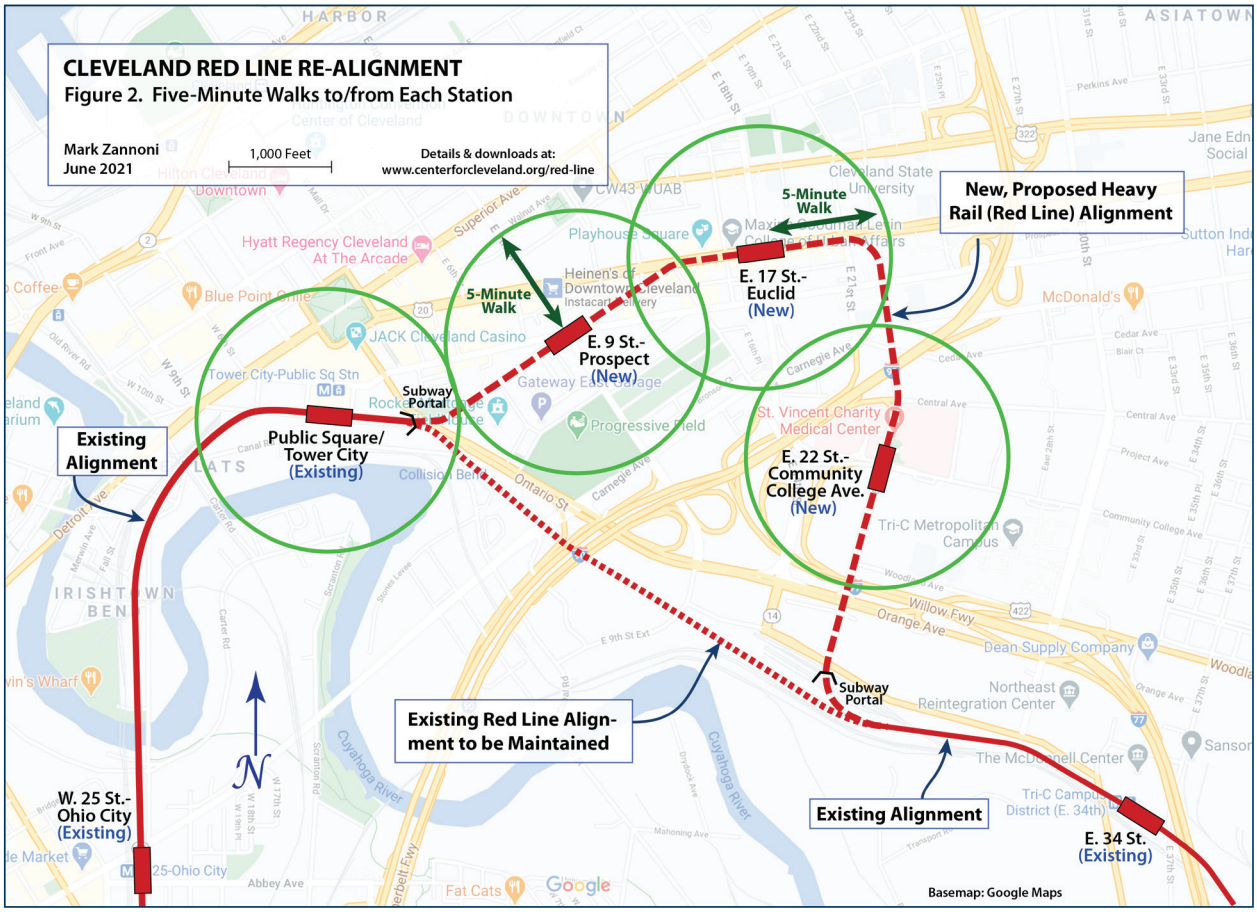


Figure 2. A critical portion of Downtown would be served by the realignment with a five-minute walk, indicated by the areas within each green circle. A single-page pdf version of this diagram can be downloaded at www.centerforcleveland.org/red-line.

3. Improved air quality due to lower levels of car-borne carbon emissions, and thus greater public health and lower public health expenses; also, direct benefits to employers from greater productivity and fewer employee sick days used by staff for themselves or for their dependents.

4. Lower traffic congestion. Though congestion levels in Cleveland are lighter compared to many other cities, any time lost sitting in traffic is lost for other purposes.

5. The city will be more economically competitive; the current trend amongst young people reveals car ownership rates and intentions lower than previous generations as they want to be free of the hassle and expense of car ownership. High-density cities with good rail transit attract younger, skilled workers which therefore attracts employers and new companies to a city, increasing wealth and opportunities for all; hence, Cleveland will be a far more economically competitive city and able to attract a broader range of people and firms, which benefits everyone—residents and businesses alike.

6. In addition to attracting new workers to the city, the subway will allow for increased density across uses, making areas more dynamic and more compelling to investors, businesses, tenants, residents, etc., thereby increasing quality of life.

7. Higher density in the core of Downtown will support the community's desire for development in the other parts of Downtown, such as the lakefront. The density will be driven by demand that the subway will create. Otherwise, jobs, retail, and residents on the lakefront may cannibalize other parts of Downtown, which without the subway, face growth challenges as witnessed over the past 60 or so years.

8. Increased property values as rail transit investments result in higher values for existing buildings and land and increased demand for developable properties within walking distance of stations. These increases would be systemwide, not just Downtown, as stations outside of the city's central business district would benefit from Downtown residents using the system.

9. Greater productivity and quality of life as residents could read or do other work on the Rapid instead of sitting in their cars and driving in traffic.

10. Greater quality of life and greater equity as door-to-door commuting times can be reduced by having more stations closer to jobs. With greater passenger loads, service frequencies can be increased, enabling even shorter wait times between trains. Greater equity will result as those dependent upon public transit spend a larger portion of their day commuting, thereby reducing time to be spent with family or friends or pursuing other activities.

11. Increased tax revenues to the City of Cleveland, suburbs, counties, and library and school districts throughout the region, as a result of new companies moving to the region, existing businesses growing, new employees relocating to the area, and higher property values.

12. Improved safety with fewer traffic fatalities, which have trended upward in recent years. Despite all the advances in vehicle safety and warning systems, the increase in fatalities from vehicle accidents is likely resulting from distracted driving, including cellphone usage. In the 2010-2014 period, there was an average of 54.8 fatalities from vehicle crashes per year in Cuyahoga County, of a vehicle occupant or pedestrian/bicyclist/bystander. In the 2015-2019 period, Cuyahoga County av-

eraged 80.2 fatalities per year—a 46% increase.[3]

Therefore, with the three new stations Downtown, far more of the city's economic heart will be walkable from the Rapid network. As a result, the system will experience much higher ridership by commuters, which will increase the number of trips per hour, thereby decreasing the waiting time between trains for all passengers. The system will also foster non-work and non-school related trips. For example, a person living around E. 9 and Euclid could easily take the rapid from the E. 9-Prospect Station to the West Side Market, whereas the walk from the Terminal Tower to E. 9 and Euclid with bags of groceries would most often be avoided and a car would be used instead, if the trip was not avoided altogether.

The new stations each have unique demand generators and characteristics

E. 9-Prospect

- Serves Lower Prospect, the Gateway neighborhood, the E. 9 Street corridor, and surrounding areas;
- Facilities at Gateway—particularly for passengers from the East who must now have to pass Gateway en route to Tower City and then double-back on foot to reach a venue; also; after an event at Progressive Field or Rocket Mortgage FieldHouse, eastbound passengers could use the E. 9 St. Station and westbound would use Tower City, thus reducing crowding and safety conditions at Tower City as 100% of post-event or post-game rapid passengers would no longer be descending upon a single station; and
- Catalyst for more development around E. 9 St. between Prospect and Carneigie.

E. 17-Euclid

- Serves Playhouse Square, Cleveland State University, and surrounding areas;
- Serves the greatest density of Downtown residences; and
- Cross-platform transfers to a future Euclid Avenue Line; further discussion on this is below.

E. 22-Community College Ave.

- Serves Cuyahoga Community College's Metro Campus, St. Vincent Charity Medical Center, the U.S. Postal Service's Cleveland General Mail Facility—a major employer, and surrounding areas;
- Dense residential area with low-car ownership rates;
- CSU's Wolstein Center—an option over the E 17 St. Station for passengers originating at or destined to points to the East; and
- Catalyst for more walkable development in the southern part of the Campus District around E. 22 St.

Connectivity to Euclid Ave. Line at E. 17 St.

The E. 17 St. Station and rail alignment should be designed to allow for cross-platform passenger transfers to a future Euclid Avenue Line and for train movements free of any at-grade crossings. An at-grade crossing will limit the amount of service that could be operated in the future, a critical operating constraint during rush hours (see Figure 3). Cross-platform passenger transfers allow for movements in the same direction (eastbound or westbound). A simple way to accomplish this is to have slight grade changes to allow tracks to pass over or under one another,

3. Latest available data for the years 2010 to 2019 is from the USDOT National Highway Traffic Safety Administration's Fatality Analysis Reporting System.

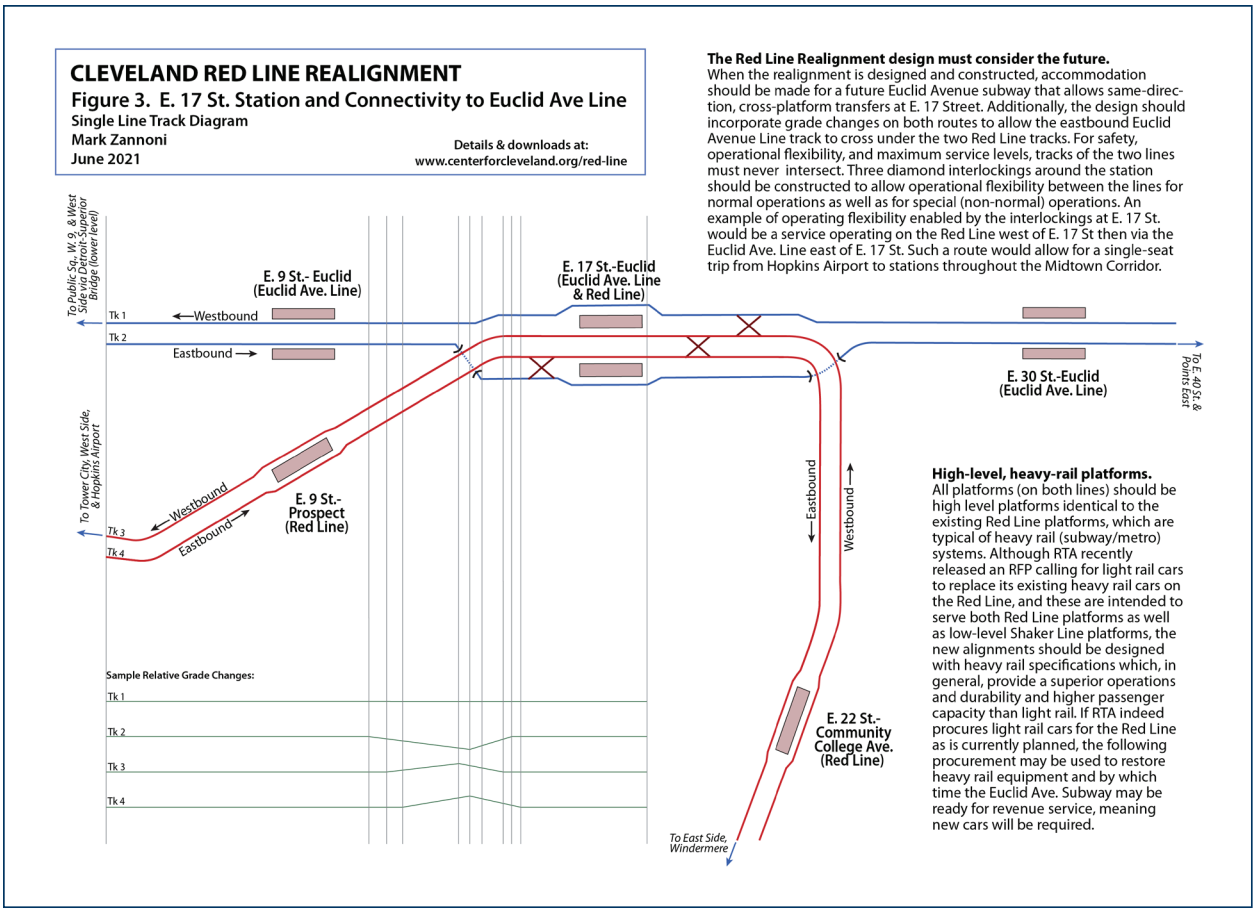


Figure 3. E. 17 St. Station and Connectivity to the future Euclid Avenue Line. A single-page, pdf version of this diagram can be downloaded at: www.centerforcleveland.org/red-line.

while maintaining the same level at the station itself. If passengers are reversing directions, such as traveling westbound on the Red Line and transferring to an eastbound Euclid Ave. train, they would simply need to cross over and wait on the other platform.

Even if the Euclid Avenue Line is never built, the only requirements of the Red Line Realignment to future-proof for it is slight elevation of both Red Line tracks east and west of the E. 17 St. platform to allow the eastbound Euclid Ave. track to descend slightly and pass underneath. (See Figure 3.) Alternatively, the eastbound Euclid Ave. track could elevate slightly east and west of E. 17 St. and the two Red Line tracks would descend slightly to pass beneath. Also, the platforms should be side platforms, not an island platform. Hence, these details, adding relatively minute costs, will future-proof the system to accommodate a future Euclid Avenue Line subway and allow easier passenger transfers and train movements. Incorporating the design principles for E. 17 St. outlined here may cost less than $25,000; correcting for their absence later could cost additional tens of millions of dollars, requiring deeper tunneling and a more elaborate station complex.

Additionally, interlockings near this station constructed under the Euclid Avenue Line project (not the Red Line Realignment) would increase operational flexibility. For example, it would allow a Euclid Avenue train to run on the Red Line tracks west of E. 17 St, enabling trips such as E. 96-Euclid (Cleveland Clinic) to W. 25-Lorain or E. 55-Euclid to Hopkins Airport as a single-seat ride.

4. Operations on the New and Old Alignments, System Flexibility, and RTA's New Car Procurement

The existing alignment between E. 34 St and Tower City should be maintained as the Shaker Lines would continue to use this route. A Shaker passenger destined to, say, Playhouse Square, could transfer at E. 55 to a westbound Red Line train. Shaker trains use low-level platforms while the Red Line uses high-level platforms, typical of heavy rail systems. In general, heavy rail is the preferred mode, allowing for faster operations—including boarding and alighting—and greater durability. Hence, the new stations should be built to heavy rail specifications with high-level platforms. These stations would therefore accommodate heavy rail cars, but not the light cars of the Shaker/Waterfront Lines.

The existing alignment would also allow for operational flexibility for the Red Line, such as the ability to operate express service between E. 34 St. and Tower City. For track maintenance and other work, the existing alignment provides an alternative route for the new subway that would allow, for example, service in one direction while the other track is out of service, thereby serving all stations in at least one direction.

RTA is currently in the process of procuring new rapid cars for its entire network and is seeking light rail cars that would serve both its heavy rail and light rail networks using cars that could accommodate both high-level and low-level platforms. If successful, a single fleet-type may save costs through economies of scale in cars purchased, inventory levels, and personnel requirements. However, the industry has yet to respond and though similar cars have been built before, the effectiveness of such a car on the RTA system has yet to be seen. Moreover, Cleveland will lose the prestige of having a heavy rail, or subway-style, system—as one of only 12 cities in the United States. If the cars are successful and any car can serve any station, then there will be a new flexibility in the network and the new cars could use the new Red Line alignment, meaning, for example, there could be single-seat service from Shaker Square to E. 9-Prospect or from Hopkins Airport to Van Aken-Lee.

More system flexibility: In the past, RTA had turned some West Side Red Line trains at Tower City, where they returned westbound instead of continuing on to Windermere. If timed correctly, the interlocking at E. 17 would allow for such trains to turn at E. 17 Street instead, providing greater service area coverage of Downtown. If such were desired, the diamond interlocking at E. 17 St between the two Red Line tracks should be constructed to the west of the station, rather than to the east as currently drawn in Figure 3.

5. Capital Costs, Operating Costs, and Funding Sources

A rough estimate for the realignment including stations, right-of-way, signaling, and power is approximately $1.6 billion, including design and construction costs. New trainsets would not be required as the additional running time would not impact RTA's peak-hour fleet requirements and car equipment spare ratio. This figure represents a small amount in comparison to the amount of return the city and seven-county region will experience in terms of new jobs, businesses, population, and tax revenues, not to mention renewed prestige.

There are two major pots of potential money to be considered and leveraged for the Red Line Realignment. The first is the $1.9 trillion Covid relief legislation signed in March and the sec-

ond is the proposed $1.7 trillion to $2.3 trillion federal infrastructure bill.

President Biden's $1.9 trillion Covid relief legislation, the American Rescue Plan, signed into law in March, provides some funds directly to states and local governments.[4] This includes direct allocations of $512 million to the City of Cleveland, $240 million to Cuyahoga County, a combined $162 million to five Cuyahoga suburbs, and 5.4 billion to the State of Ohio.[5] However, the use of these allocations as a permitted use for the subway is not clear. Final guidance on the use of the funds has yet to be issued. The law explicitly states what the funds *cannot* be use for, such as depositing money into a city's pension fund. However, a project such as the Red Line Realignment Project that enables improved access to work, a reduction in greenhouses gases, and promotes economic growth, is not explicitly stated as statutorily ineligible.

However, it is important—and central to Cleveland's future success—to note that the law does specifically allow for "necessary investments in water, sewer, or broadband infrastructure." Broadband Internet access and connectivity is a critical issue in the city and directly Covid-related for remote- (and possibly future remote-) schooling, working, and job-seeking, hence fittingly fundable through Covid relief funds.

Cleveland is the second-worst major city in the U.S. after Detroit in terms of households with no home-based connectivity excluding mobile broadband. If including cellular broadband, Cleveland is the worst ranked connected city in the U.S.[6] The lack of broadband further widens the city's digital divide and magnifies its equity issues, and ultimately compromises the economic prosperity of all of Cleveland and the region.

Therefore, as it is likely that the amount of funds from Covid relief that could be used for the subway is limited, the city should use as much of its $512 million allocation as needed to correct its critical broadband needs. This will not only provide an immediate benefit to residents with direct positive educational and economic outcomes, but it will also preserve the upcoming infrastructure funds–which will likely allow broadband as well given its importance—for the subway project. Also, pending the forthcoming guidance, some Covid relief funds may be used for the subway, such as for planning or preliminary engineering, and could then be applied if funds remain after broadband connectivity is ubiquitous.

The larger pot of funding and one that is more strategically aligned with the Red Line Realignment Project is the infrastructure bill, initially penned at $2.3 trillion and, later offered at a reduced level of $1.7 trillion in an effort to obtain bipartisan support. The project will not only help transform Cleveland and its competitiveness, but truly meets the goals of President Biden's objectives for the fund including the fight against climate change by reducing carbon emissions, improvements in racial and social equality and reduced commuting times, jump-starting the economy with new and well-paying jobs, and rebuilding the economy for the long term.

Additionally, the bill seeks projects that are deemed "shovel-worthy" as opposed to only "shovel-ready." The 2009 stimulus program, the American Recovery and Reinvestment Act of 2009, prioritized projects that were ready to be built, to inject money into the economy as quickly as possible. Biden's plan fits perfectly with the Red Line Realignment Project, which is not shovel-ready but certainly shovel-worthy,

4. https://www.congress.gov/bill/117th-congress/house-bill/1319/text/enr
5. https://home.treasury.gov/policy-issues/coronavirus/assistance-for-state-local-and-tribal-governments/state-and-local-fiscal-recovery-funds
6. https://www.digitalinclusion.org/worst-connected-cities-2019

as it seeks to fund deeper-impact projects which take longer to develop and may not be ready to begin construction immediately. The time spent developing a meaningful project, given its long-term and transformational impact, will be worth the wait. Hence, the Red Line Realignment Project is not "too late," rather it is perfectly timed for the current round of stimulus funding.

Local Match

Transportation projects built using any amount of federal funds typically require a local "match" of a fixed minimum percentage of local or state funds to a level of federal funds. However, the rules of the Federal Transit Administration, an agency of the U.S. Department of Transportation (USDOT), do allow the use of federal funds as the "local" match providing the source of such funds are from a department or agency other than USDOT.[7] The non-USDOT funding source would have to permit the use.

But more importantly, given the goals of the Infrastructure bill and how funds are to be disbursed,[8] the requirements for local match are not yet finalized and it is possible that projects may not require any local match or only a small one. The possibility of the Covid relief funds directly allocated to Cleveland ($512 million), Cuyahoga County ($240 million), and the State of Ohio ($5.4 billion) to be used as local match may be possible as well, pending guidance on the use of the Covid relief funds and the requirements of the infrastructure bill itself.

If indeed state and local funds must be used for a match, there are several options.

1. The state of Ohio may contribute state funds.
2. A very small millage on property tax. If a 50% local match were required, for an estimated cost of $1.6 billion, then $800 million would be required. A small millage of 1.1 mills, which could then be bonded as tax-free revenue to capture the revenue today for a 20-year period, would raise $1.02 billion in Cuyahoga County alone. The cost to an owner of a $100,000 home would be a mere $3.21 per month, essentially the cost of one cup of coffee. If the same rate were applied to full seven-county metropolitan area comprised of Cuyahoga and the six surrounding counties, $2.33 billion could be raised. (See Table 1).

Table 1. Total Revenue from a 1.1-Mill Property Tax and Cost to Homeowners

Geography of Tax	Assessed Value of Taxable (Non-exempt) Property in 2018	Sample Proposed Millage	Revenue in 2022[a]	20 Years of Revenue (2022-2041)[a]	Monthly Cost to Homeowner per $100,000 of Home Value
Cuyahoga County	$ 30.3 Billion	1.1	$ 39.0 Million	$ 1.02 Billion	$ 3.21
Metropolitan Cleveland (CLE-7)[b]	$ 68.8 Billion	1.1	$ 88.7 Million	$ 2.33 Billion	$3.21

a. Per real estate firm, Zillow, property values have increased 15.8% over the past one year in Cuyahoga County. To be conservative and realizing not all properties have been improved and/or placed for sale, an escalation of 15.0% was applied for all taxable properties for the total period of 2019 to 2021; from 2022 to 2041 a conservative 2% value escalation, likely lower than inflation, was applied annually.

b. Metropolitan Cleveland, or "CLE-7," is defined as Cuyahoga and the six surrounding counties. In MSA terms, it is the Cleveland and Akron MSAs.

7. https://www.transit.dot.gov/funding/procurement/third-party-procurement/local-matching-funds

8. Infrastructure stimulus funds for this project may not necessarily be disbursed by FTA, and thus may not be direct "FTA funds."

Table 2. Total Revenue from a 2.8-Mill Property Tax and Cost to Homeowners

Geography of Tax	Assessed Value of Taxable (Non-exempt) Property in 2018	Sample Proposed Millage	Revenue in 2022[a]	20 Years of Revenue (2022-2041)[a]	Monthly Cost to Homeowner per $100,000 of Home Value
Cuyahoga County	$ 30.3 Billion	2.8	$ 99.4 Million	$ 2.61 Billion	$ 8.17
Metropolitan Cleveland (CLE-7)[b]	$ 68.8 Billion	2.8	$ 225.9 Million	$ 5.93 Billion	$8.17

a. Per real estate firm, Zillow, property values have increased 15.8% over the past one year in Cuyahoga County. To be conservative and realizing not all properties have been improved and/or placed for sale, an escalation of 15.0% was applied for all taxable properties for the total period of 2019 to 2021; from 2022 to 2041 a conservative 2% value escalation, likely lower than inflation, was applied annually.
b. Metropolitan Cleveland, or "CLE-7," is defined as Cuyahoga and the six surrounding counties. In MSA terms, it is the Cleveland and Akron MSAs.

For comparison, to demonstrate the power of large numbers, if the millage were 2.8 instead, $2.6 billion and $5.9 billion could be raised in Cuyahoga and in the seven-county region, respectively, then doubled with federal matching. That would provide funding for other rail services, including the Euclid Avenue subway and other lines, as well as a Cleveland-Akron or Cleveland-Lorain commuter route. At the higher millage, the monthly cost to a homeowner of a $100,000 home would be $8.17 per month, well below the cost of gasoline, wear and tear, insurance, monthly payments, parking, or other car ownership costs. (See Table 2.)

3. Other local sources may be considered as well, such as on annual motor vehicle registrations, permissible under a new section of the Ohio Revised Code. ORC 4504.22 allows for an additional tax for a "regional transportation improvement project," the body for which must be at least two counties. Section 5595.01 of the ORC defines "Transportation improvement" as "the **construction**, repair, maintenance, or expansion of streets, highways, parking facilities, **rail tracks and necessarily related rail facilities, bridges, tunnels**, overpasses, underpasses, interchanges, approaches, culverts, and other means of transportation…" [Bold emphasis added.]

   Thus, rail development would be permissible under the Code. In addition to capital construction, maintenance appears to be permitted as well. Chapter 4504.22 allows up to $25 per motor vehicle with a minimum tax of $5. Commercial trailers are not to be subject to the tax. With approximately 1.1 million registered vehicles in Cuyahoga County and 2.6 million in the seven-county region, a simple $5 fee added to annual vehicle registration, would net $5.5 million and $13.0 million annually, and $110 million and $260 million over 20 years in Cuyahoga and the seven counties, respectively. These values, however meaningful, pale in comparison to the power of property tax millage.

It is important to reiterate that the infrastructure bill has yet to become law, and as such the actual details, including match requirements have yet to be finalized. It is possible that zero local funds will be required. The above scenarios are presented only as possible sources of local funds should matching funds be required.

Operating costs

The new alignment is approximately 3,948 additional operating feet, or 0.75 miles, per direction compared to the current route. From an operating budget perspective, there would be minimal additional power (traction and stations); car equipment; and track, signals, and stations maintenance costs. Additional crew operating time is estimated at 2.8 minutes per one-way trip, allowing for 15-second station dwell times at each new station. Given existing scheduled time at the end of each operator run, the 2.8 minutes could be incorporated into current crew work assignments, resulting in zero additional train operator costs. If the three new stations will be staffed, there would be some costs for station personnel.

The minimal additional operating costs would be more than offset by the substantial increase in fare box revenue gained from new passengers drawn to and induced by the improved system. They will also be offset by additional RTA-dedicated sales tax receipts (1% on sales in Cuyahoga County) from increased economic activity and population from the catalytic effects of the project.

6. Alternatives

Three alternatives to the proposed plan are presented; none are recommended.

Alternative 1: A station at E. 14-Euclid to replace both E. 9-Prospect and E. 17-Euclid Stations

This alternative would use the same alignment as the proposed project, but instead of three new stations, only two new stations would be built: one at E. 22-Community College Ave. and one at E. 14 – Euclid. (See Figure 4 on the following page.) The E. 14-Euclid Station would replace the stations at E. 9-Prospect and E. 17-Euclid. Given that the alignment curves from Huron to Euclid, the E. 14-Euclid Station would be built either under Huron, with the east end of the station at E. 14 St. at its intersection with Euclid, or under Euclid, with the west end of the station at E. 14 St.

This alternative would save the construction cost of building one fewer station, however, total long-term capital costs would increase as detailed below and the project would not maximize its economic potential. This alternative is **NOT RECOMMENDED** for the following reasons:

1. The alternative would not maximize the benefit of the new subway, resulting in lower ridership and economic returns.
2. Key locations including the E. 9 St. corridor, Progressive Field, and Cleveland State University would be served less well. If the line does not adequately serve the areas through which it passes, it is not serving its purpose nor providing its full potential benefit, both in terms of transportation and as a catalyst for economic and population growth.
3. Only minimal savings in operating costs: running time per trip would be approximately 23 seconds less per direction; savings in station maintenance for one station; and if the new stations are attended, some personnel savings for staffing at one station.
4. Profoundly more expensive capital costs for connections to a future Euclid Avenue Line with no-cross platform passenger transfers; instead, one line must operate two levels below the other to accommodate a mezzanine in between the lines.
5. Decreased ability to influence commuting behavior and patterns. With a station at E. 14 and Euclid, it is too far south and east within the Downtown core to adequately

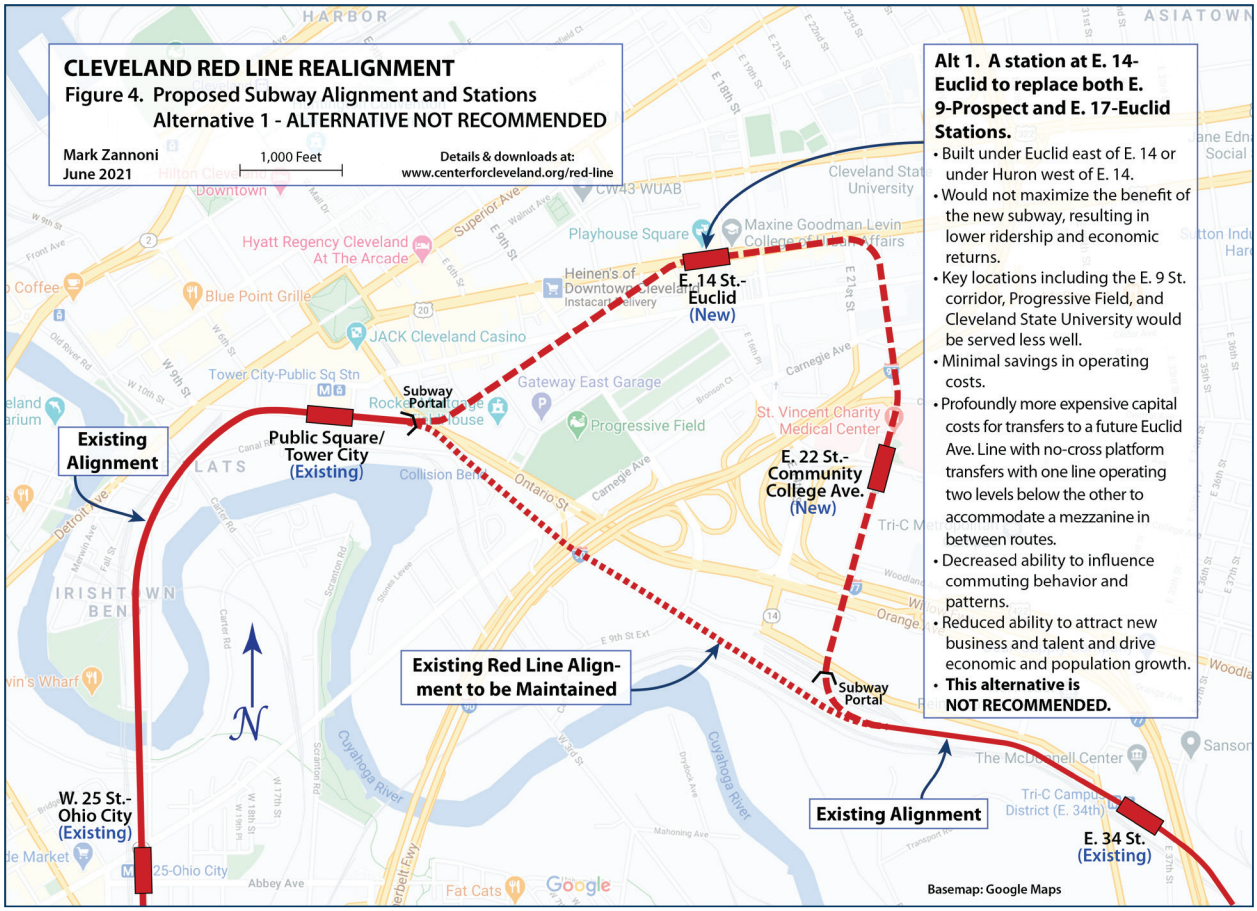


Figure 4. Alternative 1 offers two subway stations instead of three. The alternative is not recommended as the savings are minimal relative the significant loss of benefits in mobility and long-term economic and population growth the project could provide. A single-page pdf version of this diagram can be downloaded at www.centerforcleveland.org/red-line.

serve the broader area, mirroring the current issue of a station only at Tower City. The walk to E. 9 and St. Clair, for example, would still be a long trip, particularly in inclement weather, thereby not resulting in any significant changes in commuting behaviors, and thus limiting the benefits that the subway project could bring in terms of higher property values, better air quality, improved commuting options, and most importantly, the ability to induce new development.

6. Most critically: the subway under this alternative will have only a modest impact on attracting new business and talent to the city, but would incur similar costs, thereby foregoing the full potential of federal stimulus funds while simultaneously limiting the ability to leverage the subway to catalyze the city and region for economic and population growth.

There would be some savings in operating costs. However, any operating cost savings would be substantially outweighed by the profound increases in future capital costs for passenger connections to a Euclid Avenue Line. But even if a Euclid Avenue Line is not contemplated, the savings in operating costs would not be offset by the profound loss of benefits of the project, from improved commuting options to the induced jobs and development, which

will ultimately return the city to a trajectory of economic and population growth. Accordingly, this alternative is **NOT RECOMMENDED**.

Alternative 2. Operate at-grade on city streets using light rail vehicles (currently used on the Shaker Lines)

Under this alternative, no subway would be built, except an underpass under Ontario Street rising to Huron Road east of Ontario and a brief tunnel beneath the USPS General Mail Facility property, rising to E. 22 St. north of Orange Avenue. Given that heavy rail platforms are high level, if the new alignment were street-running, the low-level platforms of light rail would be more appropriate. Hence, operations on the line would be the Green Line and/or the Blue Line services—and not the Red Line. This alternative is **NOT RECOMMENDED** for the following reasons:

1. Operating trains on city streets with traffic can be slow and accordingly will attract a smaller number of new passengers.
2. The street running alignment will have a substantially lower quality of service and significantly longer trip time given that trains would be operating in mixed traffic with other vehicles, bicyclists, and pedestrians, and subject to traffic signals. Additionally, other vehicles may inadvertently block the train's tracks along the alignment and at intersections (particularly during rush hours when demand for transit is greatest). If tracks are protected by a curb, it would reduce capacity and throughput for street vehicles; moreover the use of curbs to protect a rail right-of-way could not be applied at the many intersections along the alignment.
3. If the heavy rail and light rail networks use different railcars as they do today, important one-seat services would not be possible, such as from Hopkins Airport to E. 9-Prospect. Moreover, all existing Shaker passengers destined to Public Square using the new alignment would be severely impacted as the trip time from E. 34 St. to Tower City, currently only a few minutes, would be increased by an additional 8-12 minutes depending on street traffic levels.
4. The new service on Euclid may negatively impact the existing BRT service given congestion and station dwell times, while the HealthLine itself is also subject to traffic signals, cars, and pedestrians.
5. The bridge on E. 22 over I-90 may need costly reinforcements to support rail cars.
6. Increased congestion and the possible loss of much-needed on-street parking would occur on streets with the alignment, which would impact adjacent streets as well in terms of congestion and on-street parking availability.
7. The alignment would need to be altered somewhat as E. 22 St. is a northbound-only roadway, so eastbound trips must use E. 21 St. between Euclid and Carnegie, impacting yet another city street.
8. Operations would be further limited as the number of cars per train would be constrained by street operations, resulting in likely only one-car trains being able to be operated for the entirety of the line, whereas subway station platforms could be built to accommodate trains of any length to serve current needs and the expected population and ridership growth. Such future-proofing would not be possible under this alternative and would destroy the existing efficiency of linking rail cars together to form two- or three-car consists on the Shaker Lines.
9. Stations and the alignment would be subject to weather and weather-related impacts and costs, including damage from salt and snow removal operations.

10. As trains in Cleveland do not use a third rail for power, a street-running rapid would require unsightly catenary wires on Huron, Euclid, E. 21, and E. 22. Existing assets such as the chandelier at Euclid and E. 14 may need to be raised to allow the catenary wires to run beneath it.

11. Given the additional running time between E. 34 St. and Tower City to operate on city streets, there would be a substantial increase in operating costs, including the likely need for additional train operators. Moreover, if two-car consists are instead operated as one-car units to operate on city streets, additional crew trips and thus, costs, will be required to maintain the same level of capacity.

12. This alternative would have a decreased ability to attract new development and investment, and thus a limited capacity to induce city- and region-wide economic and population growth.

Capital costs would be significantly lower given less underground work required. However, any capital costs savings would be substantially outweighed by the reduction in benefits obtained, the negative impacts to the city, the profound operating constraints, and the substantial increase in operating costs. Accordingly, this alternative is **NOT RECOMMENDED**.

Alternative 3: Do Nothing

The "Do Nothing" alternative is simply not building the project. The realignment with its three new Downtown subway stations will provide a wide range of benefits from improved transportation and air quality to induced economic growth and renewed market strength and economic competitiveness. Not constructing a subway in the past, despite some efforts, has contributed to the region's loss of economic stature and population while other metropolitan areas of the nation grew on both fronts. This issue is discussed in greater depth in Section 8. This alternative is **NOT RECOMMENDED**.

7. Project Development: The City, not RTA, should be lead agency for Concept Development and Planning

The beneficiary of the Red Line Realignment will be the City of Cleveland, Cuyahoga County, the full seven-county region, and the residents and businesses that live and operate here. The benefits arise from a transformed and newly-competitive economy, and the benefits noted in Section 3 of this Report. Accordingly, the City of Cleveland—not RTA—must lead the initial development of this project. RTA is focused on operating service, including optimizing its bus network, and doing so with ever-limited funds. Its own mission statement states: "To provide safe, reliable, clean and courteous public transportation."

RTA is not primarily concerned with driving growth or improving Cleveland—that is the domain of the city itself. Hence, the city should lead the concept development and planning of the project and have final say on design to ensure the project is built to meet the goals and needs of a future and growing city. Moreover, just about all of the right of way for the new alignment is owned by the City of Cleveland. Of course, coordination with and support by RTA is needed. RTA would also be the agency to award design and construction contracts (or an integrated Design-Build contact), and operate the alignment.

Similarly, when the IRT Flushing Line extension

was built in New York City, extending the No. 7 Line to the west of its then-terminal at Times Square, to serve the Javits Convention Center and booming new neighborhood of Hudson Yards, opening in 2015, it was the City of New York which spearheaded the project, and not the New York City Transit Authority or its umbrella parent, the New York State Metropolitan Transportation Authority. However, the MTA let and managed the contracts for design and construction.

8. Time to Stop Making the Same Mistake

There's a popular definition of insanity that is widely attributed to Albert Einstein, that is "doing something over and over again and expecting a different result."

Plans for a Downtown subway have been raised a few times over the past 100 years. The subway would have improved transportation, supported existing jobs and created and induced new ones, catalyzed economic and population growth, discouraged unhealthy sprawl, improved air quality, enhanced quality of life, advanced better land uses, and allowed the city to continue its non-stop growth experienced until the 1950s. Those are all the things a subway would do today except that it would *return* the city to non-stop growth.

Cuyahoga County voters passed a bond issue in 1953 to build a downtown circulator subway, as a loop from the Terminal Tower down Superior to E. 9 St to Euclid and E. 13 St, then west on Huron back to the Terminal Tower. But Albert Porter, the then-County Engineer and extreme highway enthusiast, persuaded County commissioners to kill the plan. Highways destroyed communities—particularly minority and low-income ones—and unsightly sprawl ensued. Between 1970 and the 2019—the latest population estimate for the county—Cuyahoga lost 28% of its population, or nearly a half-million people, leaving the remaining residents to support the maintenance of the fixed and expanding infrastructure including roads and water, wastewater, and electrical lines.

A subsequent effort by merchants in Playhouse Square attempted to resurrect the subway plan in a modified version but was also blocked. In the 1980s, the "Dual Hub" plan featured a Euclid Avenue subway for the portion of Euclid that is Downtown, for an alignment connecting the city's two major economic hubs, Downtown and University Circle. However, the Dual Hub project never came to fruition. Instead, a bus rapid transit line, the "Health Line," was built in the mid-2000s and opened in 2008. With the BRT constructed instead of the Dual Hub subway, Cleveland and Cuyahoga County's population continued to slide. And despite the $200 million price tag, *The Plain Dealer* reported that during rush hours, trip time on the westbound (Downtown-bound) HealthLine was only three minutes faster than the No. 6 Euclid Avenue Local buses that it replaced.[9]

Globally, BRT has been an effective tool in improving transit service with faster operations and an improved ride quality over traditional buses, particularly when using dedicated lanes, curbside fare payments, and priority traffic signaling, which Cleveland has but does not use. However, no matter how effective BRT can be or how much cheaper it may be than rail construction, a bus line does not have the same effect as rail in stimulating and catalyzing development and investment leading to economic growth.

Cleveland needs innovative, transformational action and it needs it fast. The subway project

9. https://www.cleveland.com/metro/2010/07/healthline_buses_moving_slower.html

is not only about improving transportation and air quality. It is about transforming the city and region, drawing new businesses and people to Greater Cleveland and thereby reversing years of decline in population, economic power, and global status.

And here enters the "insanity" cited above. Continual rejection of a downtown subway has not resulted in the city and region growing with more jobs and more population. Rather, the opposite has continued to occur. Cleveland is hemorrhaging population and market influence. Once America's fifth-largest city, Cleveland is now estimated at 53rd, having lost nearly 60% of its population between the city's peak in 1950 and the 2019 Census estimate.

The population of the seven-county Cleveland region has actually *decreased* by 8% since its 1970 peak, when the region surpassed 3 million people, while the U.S. as a whole has grown 62% during this time. This means Cleveland's relative importance has been steadily diminishing, and with it, the city's global influence and ability to land new jobs, companies, and investment in the region.

Change is sorely needed. The Red Line Realignment is a relatively inexpensive project that will truly transform the city and return the region to growth and opportunity. The project will ultimately pay for itself with the new jobs and population and increased land values it will bring.

Cleveland cannot continue to hope for growth, but take no major action to achieve it—especially in the current context of so much support for the project in terms of federal infrastructure funding, general infrastructure concerns, climate change concerns—and in light of so much need. It is time to stop making the same mistake of passing on a Downtown subway.

The plan presented here is an improvement over the plans of the 1950s. Those moved passengers around Downtown once they were already there, meaning that, unless a passenger began their trip Downtown, a transfer was required from the original mode (e.g., bus or rapid) to the Downtown Subway. This Red Line Realignment plan provides three Downtown stations in a subway as part of an existing line that already connects stations on the East Side and West Side of the city, meaning a transfer is not required, saving time and hassles.

9. Conclusion

Rail transit is a tool and major catalyst for economic development and private sector investment, and an absolute necessity for major, global cities, which Cleveland should aspire to be once again. After decades of stagnancy, Cleveland needs vision and a transformative project that will truly change its future trajectory. Improvements on the Downtown Lakefront are great and should be pursued as well. But a new subway with three Downtown stations—at a fraction of what a new line would cost—will have a far greater impact and capacity to improve and grow the city and region over other infrastructure projects.

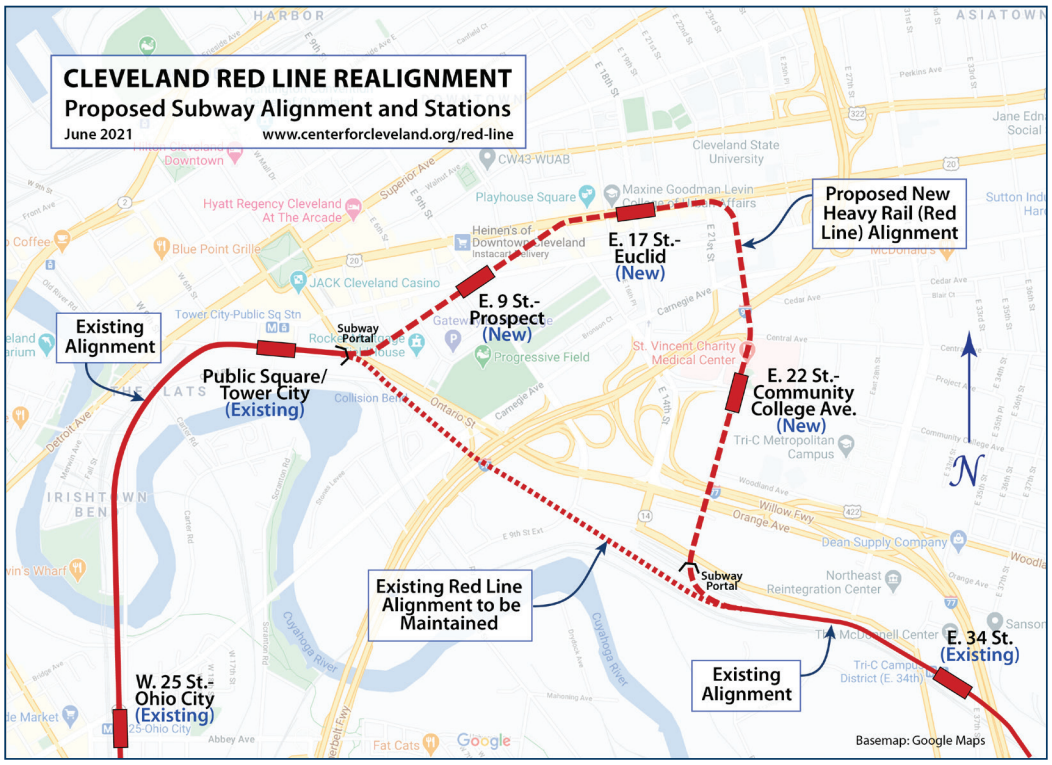
The Red Line Realignment is something the city must build to secure its future. And with a willing and financially generous administration in Washington that is truly focused on infrastructure as a basis for economic development, Cleveland must jump on this opportunity. Over time, for all locally-borne costs, if any, this project will have fully paid for itself from the increased tax revenues generated by new and induced economic activity.

The Red Line Realignment, with its 1.7-mile subway alignment and three new Downtown stations, is part of a larger rail transit plan being developed by Mark Zannoni and the Center for Cleveland. However, there is a great urgency

given the funding opportunities currently before the city and nation that must be pursued without delay. Competitor cities are no doubt chasing the same funding source for their own projects, aiming to facilitate their own growth. Therefore, this document is being released before the full rail plan is completed. Rest assured, the systemwide plan under development, will fully complement the Red Line Realignment as presented here.

With the pending infrastructure bill and commitment by the Biden administration to support meaningful infrastructure that will help reshape the national economy and keep America productive and competitive over the long term, the City of Cleveland has a unique opportunity in the Downtown Subway to transform itself and the region, to return to a trajectory of growth, and to retake its place as one of the world's greatest cities.

[End of Report]



The Center for Cleveland

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