Understanding the Economic Benefits of Sustainable Infrastructure

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EXECUTIVE SUMMARY

The team worked with the West Houston Association (WHA) to construct a report on the economic benefits of implementing sustainable infrastructure in order to incentivize future investments from developers. After a semester-long data collection, research, and analysis in service to WHA, the team has arrived at several conclusions and recommendations regarding incorporating sustainable infrastructure in West Houston communities. To arrive at these, the team conducted five interviews with developers and engineers, analyzed readings from secondary sources, and performed a financial analysis of the data obtained. The team found that incorporating sustainable infrastructure can bring economic benefits through maintenance cost savings, tax exemption, and increased attractiveness of the projects and resale values. There are also environmental and social benefits, such as preserving natural features and improving air quality. However, the team had access to insufficient data on the detailed costs and benefits of investing in sustainable projects. The team was also not granted data on the five intended sustainable infrastructure axes (water, parks, roads, sewer, and drainage). The team found that the data insufficiency is due to two reasons: first, the data on costs and benefits is not collected for distribution; second, the information exchanges between the developers and WHA for eco-sustainability initiatives are infrequent. Based on the analysis, the team formulated three recommendations to WHA: 1) establishing an information pipeline with the developers; 2) incentivizing developers through quantifying direct benefits, savings, and costs; and 3) demonstrating the emerging trends of real estate and how it can transfer into buyers' appeal. The team hopes the analysis and recommendations illustrated below yield improvements for WHA for years to come.

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THE CLIENT MANDATE

This semester, the team, as members of the Sustainable Infrastructure group in SOSC 444 Consulting Practicum at Rice University, served WHA in constructing a research report to demonstrate the economic benefits of investing in sustainable infrastructure projects. With a special focus on residential master plan communities (PUD), the team focused on providing justification for the economic benefits of implementing sustainable infrastructure, including 1) water, 2) sewer, 3) drainage, 4) parks, and 5) roads into residential master plan communities in West Houston. WHA has been promoting sustainable infrastructure using Triple Bottom Line guidelines (environmental, social, and economic benefits). From WHA's perspective, while the social and environmental benefits are clear, the economic benefits are less clear and need more justification. Hence, the goal is to incentivize future investments from developers by developing a final deliverable that justifies the economic benefits of sustainable infrastructure.

WHA provided the team with a mandate that contained three parts: 1) interviewing local developers and obtaining secondary information concerning the economic advantages of investing in sustainable infrastructure; 2) presenting a framework to support future engagement with developers, and 3) promoting the alignment of future residential developments with the best practices of sustainable infrastructure. By taking these considerations, the team aimed to create a comprehensive plan to incentivize future investment in sustainable infrastructure in West Houston.

CURRENT SITUATION

WHA is a non-profit organization that strives to better the livelihoods of 2 million people who live and work in the Greater West Houston area. According to WHA's mission articulated on its website, the organization aims to promote "high-quality development, sustainable infrastructure, long-term planning, and public policy."

West Houston has a goal to attract progressive businesses with an eco-sustainable mindset. This is because they are aware of the vast environmental and social benefits that come with sustainable development and they want more developers to engage with such development strategies so that the Greater Houston Area benefits.

In West Houston, there are available areas for developing residential communities, but developers are facing dilemmas in whether to invest in eco-sustainable infrastructure or not. There is a challenge to engage with developers and form partnerships to develop eco-sustainable infrastructures. Since developers are hesitant to transition from traditional infrastructure to sustainable infrastructure, clear economic benefits need to be demonstrated in order to incentivize developers.

METHODOLOGY

To approach the problem, the team divided the project into four parts: interviews and data collection, data analysis, forming conclusions, and report writing and presentation. The key methodology in this project revolved around individual interviews the team conducted with developers and engineers of sustainable infrastructure projects in the West Houston area. The team interviewed five developers and engineers who are experts in their field and have contributed to/engaged with several sustainable infrastructure projects in the West Houston area. The interviewees were:

- Ms. Mary Keilers and Mr. Trent Rondot, who provided information on Bayou Greenways;
- Ms. Tricia Brasseaux, who provided information on Bridgeland;
- Mr. Rob Bamford who provided information on Cross Creek Ranch; and
- Mr. Larry Mueller who provided information on the Cinco Ranch region.

The team also received valuable information from Mr. Harry Thompson, attorney at ABHR, about how Municipal Utility Districts (MUD) work in Texas. West Houston Association, along with Mr. Thompson, provided us with documents on Bridgeland. Additionally, the team conducted secondary research on the topic. The articles the team looked at were from Forrester, Brookings, US Environmental Protection Agency (EPA), MDPI (a Swiss-based open-source academic journal publisher), and The Pennsylvania Landscape & Nursery Association (PLSNA). The bibliography at the end of the report provides information on the sources.

DATA COLLECTION AND INTERVIEW RESULTS

The team's research efforts covered secondary research from published sources online and direct first-hand interviews and secondary research.

Secondary Research

According to Abhijit Sunil, a Senior Analyst at Forrester, being green not only helps the planet, but also makes businesses more successful, as most shareholders including governments, customers, and investors demand this sensibility from businesses. (Sunil, 2021)

Another source discusses the need for sustainable infrastructure development to achieve Sustainable Development Goals. The information notes the investment gap and the importance of promoting investment in sustainable and resilient infrastructure. In doing so it emphasizes that

> *"Good infrastructure unshackles and removes constraints on economic growth and helps increase output and productivity. Investment in sustainable infrastructure can help generate employment, boost international trade, industrial growth, and competitiveness while reducing inequalities within and among countries" (Brookings, 2016).*

The team also reviewed the article on the return on investment (ROI) of sustainable infrastructure, which suggests that green infrastructure investments can provide significant financial returns while delivering important environmental, social, and economic benefits (*PLSNA, n.d.*).

The article from the Environmental Protection Agency (EPA) discusses the ESG benefits of sustainable infrastructure in Lancaster, Pennsylvania. According to the study, the Green Infrastructure Plan could bring approximately $2.8 million in annual benefits regarding energy, air quality, and climate. Also, the article states that the plan could reduce gray infrastructure capital costs by $120 million, and reduce wastewater pumping and treatment costs by $661,000 annually. Overall, the Green Infrastructure Plan can approximately generate an annual benefit of $4.2 million (EPA, 2022).

Another article from EPA emphasizes that sustainable infrastructure can reduce a community's infrastructure costs, promote economic growth, and create construction and

maintain jobs. It also provides public and private economic benefits, including reduced flooding losses, cost savings, and increased property values. (EPA, 2022)

An additional study emphasizes the importance of cross-disciplinary collaborations to optimize engineering performance while maximizing the environmental, social, and economic benefits of sustainable infrastructure practices. The study highlights that the hypothetical sustainable infrastructure projects studied in the research were found to have a payback period of 6 years for an investment of more than $1 trillion, which is a relatively fast return. The ratio of benefits to costs was estimated to be 1.17 after 20 years of implementation (Xing et al., 2021)

Finally, the team incorporated information about the context of the real estate industry as a whole. For this industry, the Environmental/Social/Governance (ESG) is increasingly seen as more of an opportunity than an obligation. Additionally, the EPA is promoting the development of sustainable infrastructure with a special focus on water infrastructure. The Utility of the Future Today Recognition Program recognizes water sector utilities for their leadership and innovation in several key areas, such as organizational culture, water reuse, and resiliency. EPA's National Water Reuse Action Plan (WRAP), and its partners are seeing progress in advancing water reuse capacity across the country. Specifically, for investments in water reuse infrastructure, EPA is 1) providing compiling federal funding sources, 2) investing in resilient water infrastructure in communities, 3) integrating water reuse and water security into FEMA Hazard Mitigation Programs, and 4) developing the Bureau of Reclamation's large-scale water recycling and reuse funding opportunity (EPA, 2023).

Interviews Results

The interviews were the most substantial and value-creating part of the project. Without exception, the interviewees shared their insights and experiences on the topic of sustainable infrastructure although few quantitative data were obtained. Our interviewees are arranged in order of the timing of their interview.

A. Qualitative Data Reviewed

- **Bayou Greenways**

The Bayou Greenways project connects ten major bayous in the greater Houston area to greenways of natural beauty, connectivity, reaction, habitat preservation, and increased

functionality and cleanliness – all while addressing the deficit of equitably distributed green spaces. Mr. Trent Rondot, the conservation and maintenance director of the Houston Park Board, highlighted the environmental, health, and economic benefits of Bayou Greenway during the interview. He mentioned that "dollar value could not be attributed to all benefits discussed due to the lack of reliable measurement data". In addition, what differentiates Bayou Greenways as a best practice project is its "scale": the greenways "spread out over 150 miles and touch all demographics, giving people access to green space". The Bayou Greenway Trail system is used by many people to "commute to work, to school, and to shop."

- **Bridgeland (Parkland Square, Purple Pipe System, and Bridgeland Creek Parkway Sections 7&8)**

The Bridgeland Parkland Square project establishes a model at a regional level that integrates sustainable characteristics for low-impact development while optimizing advantages for both the environment and the well-being of its residents. The Bridgeland Purple Pipe System project reduces the community's demand for potable water by using two sources of non-potable water that other developments do not typically use. The first source is to treat water to Type 1 effluent standards, water that is clean enough to be discharged into public lakes. The second source is the adjacent Cypress Creek – Bridgeland has access to some volume of their water. Both sources are pumped into Bridgeland's interconnected lake system to maintain a steady level. The Bridgeland Creek Parkway Sections 7&8 project enhances the community's natural environment by incorporating a sustainable stormwater conveyance and flood protection system with bio-swales. According to Ms. Tricia Brasseaux, a Director of Planning and Development for Bridgeland, "Sustainability is very hard to quantify". Ms. Brasseaux mentioned that it is challenging to calculate the exact costs/benefits of the three projects we analyzed because "it's a yearly cost to develop and the returns apply to all of Bridgeland," and "the returns on Bridgeland is a 30- to 50-years project because the real return is not going to come in until we sell massive lands in Bridgeland." Despite the fact that they are "actively building the community up", it is "the commercial that's going to get the cash flows". As a result, the detailed costs and benefits by categories are difficult to assess and hard to demonstrate in the form of a report.

- **Cinco Ranch**

The Cinco Ranch project reduces the quantity of potable water used for irrigation by improving Municipal Utility District (MUD) No.1's water infrastructure to allow for reclaimed water use, hence reducing the negative effects and high costs of subsidence. According to Mr. Larry J. Mueller, the Principal of BGE, Inc, reclaimed water "has to go through the tertiary treatment to meet Texas commission environmental quality rule in order to be used". What distinguishes Cinco Ranch MUD No.1 from other sustainable projects is that it "already had this treatment technology so they didn't have to do any retrofitting, which is a huge cost saving".

- **Cross Creek Ranch**

The Cross Creek Ranch polishing pond project functions as an engineered water quality basin where water is filtered for reuse throughout the development for irrigation. According to Mr. Rob Bamford, the General Manager of Cross Creek Ranch at the Johnson Development Corp, when groundwater is taken out of the ground to replenish lake levels, three costs are incurred: regulation cost, pumping cost, and distribution cost. Mr. Bamford noted that "Groundwater is very regulated by the county. Every gallon of groundwater that is pumped out of the ground to supplement the lake levels has to be accounted for". Mr. Bamford also spoke on the intangible benefits this project brings from a drainage standpoint: this project has various water amenities that benefit the community not only as an enjoyment but also as a drainage facility.

B. Quantitative Data Reviewed

The interviews provided much insight into the intentions, mode of thinking, and criteria held by developers concerning sustainable infrastructure in the West Houston area. The interviews did not, however, provide much concrete information on the costs and benefits of said investments. This section summarizes the data provided by each project owner.

- **Cinco Ranch**

	Costs	Benefits
Brackish Desalination	$17,000,000	$2,000,000 annually

Reclaimed Water Reuse	Phase 1: $12,700,000 Phase 2 (Design): $360,000 Phase 2: $14,122,000	Phase 1 (2018): $724, 113 (partial) Phase 1 (2019): $1,104,066.02 Phase 2: est. $1,144,000 annually

- **Bayou Greenways**

Costs	Benefits
Upfront: $220,000,000 Annual maintenance: $10,000,000 10-year implementation: $480,000,000	$117,000,000 annually

Notes:

- For the Bridgeland Purple Pipe System project, the team was only able to collect partial benefits of the project and was not able to find detailed information on its cost.
- For the Bridgeland Parkland Square project, the team was only able to find data on the savings of this project but not the costs.
- For the Bridgeland Creek Parkway Sections 7&8 project, both the costs and benefits of this project were missing.
- For the Cross Creek Ranch project, the team was not given any data on the costs and benefits of this project.

ANALYSIS AND INTERPRETATION

According to the initial client meeting and desk research on sustainable infrastructure, the team came up with five axes of water, park, drainage, roads, and sewer for sustainable initiatives. Below is a demonstration of the five axes that each of the projects focuses on. The team obtained data on the axes of water, park, and drainage, but was not able to collect data that covers the other two axes. The data suggests that more sustainable initiatives are related to water, and there are also some initiatives related to parks and drainage. This aligns with the secondary research the team conducted — there is a focus on water-sustainable infrastructure.

	Water	Park	Drainage	Roads	Sewer
Cinco Ranch	■				
Bayou Greenways		■			
Bridgeland 1: Purple Pipe	■		■		
Bridgeland 2: Parkland Square		■			
Bridgeland 3: Creek Parkway Sections 7 & 8	■				
Cross Creek Ranch	■		■		

Financial analysis was conducted for Cinco Ranch and Bayou Greenways since the team obtained the data needed for the calculation of the two projects. The team resembled a cash flow analysis and defined the return on investment (ROI) as a 1 divided by the payback period to simplify the calculations for making comparisons. The current 2.5 percent municipal bond rate was used to conduct the cash flow analysis.

Cinco Ranch

	Brackish Desalination	Reclaimed Water Reuse
Costs ($)	17,000,000	Phase 1: 12,700,000 Phase 2: 14,482,000 Total: 27,182,000
Yearly Saving ($)	2,000,000	Phase 1 (2018): 724,113 Phase 1 (2019): 1,104,066 Phase 1 est. future: 1,500,000 Phase 2 est.: 1,144,000
Payback Period (yrs)	8.5	Phase 1: 8.47 Phase 2: 12.66
ROI (1/Payback Period)	12%	7.9% (combined)

Bayou Greenways

Costs ($)	Upfront: 220,000,000 Annual Maintenance: 10,000,000 10-Year Implementation: 480,000,000
Benefits ($/yr)	117,000,000
Net Present Value over 30 Yrs (calculated 2.5% municipal bond rate)	2,334,697,892
Payback Period (yrs)	6.18
ROI (1/Payback Period)	16%

Based on the financial analysis, The Cinco Ranch project has an ROI of 12 percent, and the Bayou Greenways project has an ROI of 16 percent. Since the current municipal bond rate is about 2.5 percent, a 10 percent ROI (four times more than the municipal bond yield) is considered a benchmark for a good and worthy project. Using this benchmark, both the Brackish Desalination system of Cinco Ranch (ROI = 12%) and the Bayou Greenways project (ROI =

16%) are economically worth it. Although the information on costs and benefits obtained was limited, the sustainable infrastructure seems to have a relatively high ROI over the benchmark of municipal bond rate.

CONCLUSIONS

The team has formulated findings and conclusions from the interviews and the secondary research:

- Incorporating sustainable infrastructure can reduce maintenance costs in the long term, increase economic benefits, and be used as a marketing strategy that can be transferred into buyers' appeal in home selling. Based on the secondary research the team conducted, ESG is a trend in the real estate industry. Specifically, according to the team's interview with staff from the Rice Sustainability Center, there is a generational change within the real estate industry. Younger generations are more likely to purchase/involve in sustainable projects because of the intangible benefits they bring.
- Aside from the monetary value that sustainable infrastructure brings, there are also environmental and social benefits that come with it, for example, the preservation of a community's natural features, improved air quality, and utilization of reclaimed water which reduces the use of potable water.
- There is insufficient information on the detailed breakdown of the costs and benefits of investing in sustainable projects. The quantitative data that the developers and engineers offered was very limited. Multiple developers emphasized that it is challenging to quantify the economic benefits of investing in sustainable infrastructure due to the insufficient amount of reliable measurement data, which results in missing sections on the costs and benefits associated with each project.
- The team also was not able to collect data on all five axes (water, drainage, sewer, parks, and roads) as pointed out in our proposal. The developers and engineers the team worked with only had information on water, park, and drainage. The team noticed that this consulting project itself centered on a phase two problem, but there is insufficient phase one information available, making it difficult to draw conclusions.
- The project has confirmed the team's hypothesis that there are no clear communication channels between the developers and WHA. Only two out of seven projects provided the team with available data to conduct a financial analysis on the benefits of investing in sustainable infrastructure.

- Developers are not cognizant of the information needed by WHA to support its eco-sustainability initiatives. Information is not being collected and not being efficiently packaged for distribution to parties such as WHA. This may be due to two reasons: 1) developers do not consider this information valuable or useful, and 2) developers do not include sharing of information with WHA as an important element of business.
- The competition from the Woodlands affects both West Houston developers and WHA in their own spheres of activity. Therefore common actions and an alliance to improve the competitive situation of West Houston would be to everybody's advantage. This leads to the conclusion that improving links with developers in terms of information lifting, maintenance, recording, and transmission is of vital importance.
- There are many projects being conducted in West Houston with significant aspects of eco-sustainability, but this is not being captured for purposes of WHA analysis and for serving as a benchmark of best practices for other members of the WHA chamber.
- A strengthened relationship between WHA and developers is needed to collect information on costs and benefits to fulfill the items presented in the mandate for the current project.
- To incentivize developers, WHA can demonstrate the direct savings from tax exemption and utility bills, and economic benefits arising from the generational change of buyers' values. Based on secondary research, the ESG agenda has clearly become more pressing, and it is increasingly seen as more of an opportunity rather than an obligation.

RECOMMENDATIONS

Based on the analysis and findings, the team would like to propose several next steps to assist West Houston Associate to achieve its goal of incentivizing developers to invest in sustainable infrastructure.

- First, the team recommends WHA establish an information pipeline to bridge the gap in data and knowledge transformation between developers and WHA. Specifically, the team suggests that WHA collects data such as costs and benefits detailed by categories.
- Second, the team suggests WHA incentivizes developers by quantifying the direct savings from tax-exempt and utility bill saving since it is challenging to quantify the economic benefits of the entire sustainable project. WHA can also provide developers with information about specific local environmental regulations and tax-exempt policies alongside potential direct savings.
- To further inventive developers, the team recommends WHA demonstrates how sustainable initiatives can transform into buyers' appeals owing to the generational change in home buyers' values. Specifically, WHA can collect examples from developers of how sustainable neighborhoods sold out more quickly and at a higher price.
- Based on the secondary research on the government's support of sustainable initiatives, the team recommends that WHA support developers obtain funding from organizations. For instance, EPA is providing funding for green infrastructure with a special focus on water infrastructure (*Knowledge Finder,* 2023).

APPENDICES

The images below are taken from the Microsoft Excel sheet that the team used for calculating the payback period, ROI, and net present values of the projects.

1. Cinco Ranch		
i. Brackish Desalination		
A. Costs		
Upfront	$ 17,000,000.00	
B. Benefits		
Water Rate Savings from Brackish Desalination		
Yearly	$ 2,000,000.00	
C. Cost/Benefit		
Payback Period [A/B]	8.50	Years
Estimated ROI [1/Payback Period]	12%	
ii.Reclaimed Water Reuse		
A. Costs		
1. Cost of Phase 1:	$ 12,700,000.00	
2. Design Cost of Phase 2:	$ 360,000.00	
3. Cost of Phase 2:	$ 14,122,000.00	
4. Total Cost of Phase 2:	$ 14,482,000.00	
Total Phase 1 & 2	$ 27,182,000.00	
B. Benefits		
Savings from Reclaimed Water Reuse		
Yearly		
1. Phase 1 water rate savings in 2018 (partial):	$ 724,113.00	
2. Phase 1 water rate savings in 2019:	$ 1,104,066.02	
3. Phase 1 est. annual water rate savings in the future:	$ 1,500,000.00	
4. Phase 2 estimated annual savings:	$ 1,144,000.00	
C. Cost/Benefit		
1. Phase 1:		
Payback Period [A/B]	8.47	Years
Estimated ROI [1/Payback Period]	11.8%	
2. Phase 2:		
Payback Period [A/B]	12.66	
Estimated ROI [1/Payback Period]	7.9%	

2. Bayou Greenways		
A. Costs		
Upfront	$ 220,000,000	
Annual Maintenance	$ 10,000,000	
10 year implementation	$ 480,000,000	
Net Present Value over 30 Years	$ (849,401,995)	
B. Benefits		
One time saving	$ -	
Yearly	$ 117,000,000	
Net Present Value over 30 Years	$ 2,334,697,892	
C. Cost/Benefit		
Payback Period [Calculated]	6.18	Years
Estimated ROI [1/Payback Period]	16%	

2. Bayou Greenways Concept	0	1	2	3	4	5	6	7	8	9	10
Upfront	$ (220,000,000)										
Annual Maintenance		$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)
Annual Implementation		$ (48,000,000)	$ (48,000,000)	$ (48,000,000)	$ (48,000,000)	$ (48,000,000)	$ (48,000,000)	$ (48,000,000)	$ (48,000,000)	$ (48,000,000)	$ (48,000,000)
Annual Cash Flow	$ (220,000,000)	$ (58,000,000)	$ (58,000,000)	$ (58,000,000)	$ (58,000,000)	$ (58,000,000)	$ (58,000,000)	$ (58,000,000)	$ (58,000,000)	$ (58,000,000)	$ (58,000,000)
Current Value of Future Cash Flow	$ (220,000,000)	$ (56,585,366)	$ (55,205,235)	$ (53,858,766)	$ (52,545,137)	$ (51,263,549)	$ (50,013,218)	$ (48,793,384)	$ (47,603,301)	$ (46,442,245)	$ (45,309,507)
Net Present Value Costs	$ (849,401,995)										
One time saving benefit		$ -									
Yearly Benefits			$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000
Annual Cash Flow	$ -	$ -	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000
Current Value of Future Cash Flow	$ -	$ -	$ 111,362,284	$ 108,646,131	$ 105,996,225	$ 103,410,952	$ 100,888,733	$ 98,428,033	$ 96,027,349	$ 93,685,218	$ 91,400,213
Net Present Value Benefits	$ 2,334,697,892										
Cumulative Payback Calculation	$ (220,000,000)	$ (276,585,366)	$ (220,428,316)	$ (165,640,951)	$ (112,189,863)	$ (60,042,460)	$ (9,166,945)	$ 40,467,704	$ 88,891,751	$ 136,134,725	$ 182,225,430
Accumulated Cash Flow Y6	$ (9,166,945)										
Accumulated Cash Flow Y7	$ 40,467,704										
Cash Flow Y7	$ 49,634,649										
% Year to payback Y1 Cash Flow	18%										
Payback Period [years from Y 0]	6.18										
Estimated ROI	16%										
Discount Rate [10 yr Muni Index]	2.5%										

Year										
11	12	13	14	15	16	17	18	19	20	21
$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)
$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)
$ (7,621,448)	$ (7,435,559)	$ (7,254,204)	$ (7,077,272)	$ (6,904,656)	$ (6,736,249)	$ (6,571,951)	$ (6,411,659)	$ (6,255,277)	$ (6,102,709)	$ (5,953,863)
$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000
$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000
$ 89,170,940	$ 86,996,039	$ 84,874,184	$ 82,804,082	$ 80,784,470	$ 78,814,117	$ 76,891,822	$ 75,016,411	$ 73,186,743	$ 71,401,700	$ 69,660,195
$ 263,774,922	$ 343,335,402	$ 420,955,382	$ 496,682,192	$ 570,562,007	$ 642,639,874	$ 712,959,746	$ 781,564,498	$ 848,495,964	$ 913,794,954	$ 977,501,287

22	23	24	25	26	27	28	29	30
$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)
$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)	$ (10,000,000)
$ (5,808,647)	$ (5,666,972)	$ (5,528,754)	$ (5,393,906)	$ (5,262,347)	$ (5,133,997)	$ (5,008,778)	$ (4,886,613)	$ (4,767,427)
$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000
$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000	$ 117,000,000
$ 67,961,166	$ 66,303,577	$ 64,686,416	$ 63,108,699	$ 61,569,462	$ 60,067,768	$ 58,602,701	$ 57,173,367	$ 55,778,894
$ 1,039,653,807	$ 1,100,290,411	$ 1,159,448,074	$ 1,217,162,867	$ 1,273,469,982	$ 1,328,403,753	$ 1,381,997,676	$ 1,434,284,430	$ 1,485,295,897

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