

# 2012 Digesting Urban Organic Residuals (DUOR) Forum



**Alternative Project  
Financing Methods**



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# Agenda

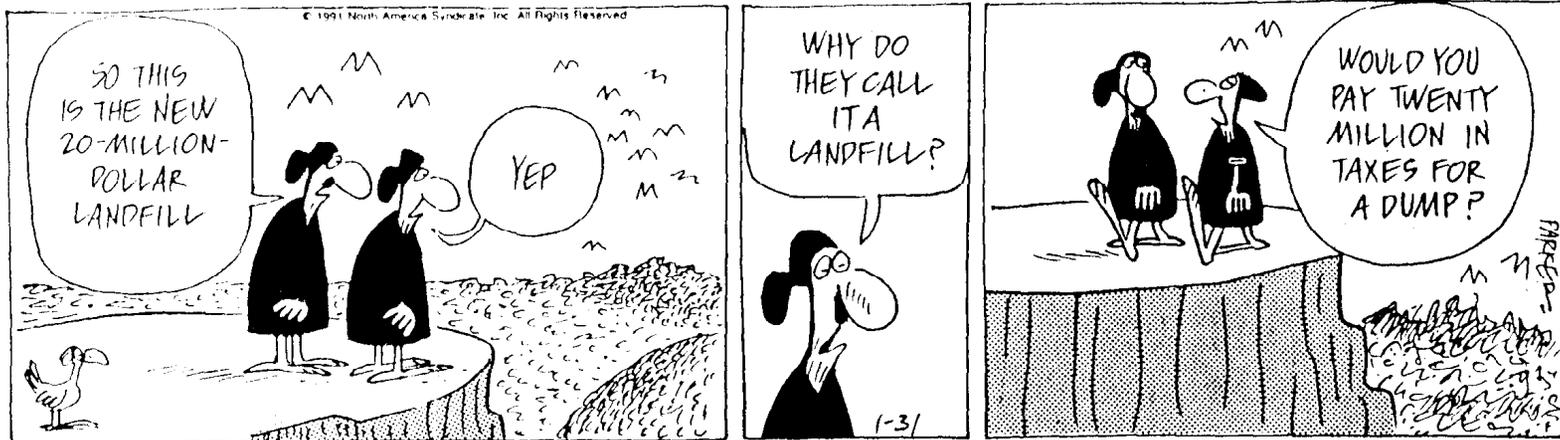
- **Overview of Case Studies**
- **Project Financing Options**
- **Summary and Recommendations**



# We Like to Talk Trash

## THE WIZARD OF ID

## BY BRANT PARKER & JOHNNY HART



# Case Studies

- To illustrate the project financing methods, we will use four AD case studies, chosen because they were:
  - Publicly available
  - Recently completed
  - Out-of-state projects

## Summary of Anaerobic Digester Feasibility Studies

<u>Date of Study</u>	<u>Agency</u>	<u>Location</u>
June 2010	Lowville Digester Workgroup*	Lewis County, New York
March 2010	Oregon Department of Energy - Baker High School	Baker City, Oregon
October 2009	Lewiston Auburn Water Pollution Control Authority	Lewiston, Maine
November 2008	Linden Hills Power & Light	Linden Hills, Minnesota

\*Note: the Lowville Digester Work Group is comprised of representatives from Cornell University Cooperative Extension of Lewis County, Kraft Foods, Lewis County Economic Development Office, residents, dairy farmer representatives, Lewis County Farm Bureau, and the Soil and Water Conservation District.

# Feedstock and Project Goals

- Each study analyzed different feedstock, but all looked at urban and organic sources and none were focused solely on agricultural waste.
- Project goals fell into two main categories:
  - Generate energy and other products for sale (Revenue)
  - Replace existing facilities (Avoided Costs)

<u>Study</u>	<u>Feedstock Analyzed</u>	<u>Project Goals</u>
Lowville	Urban Food Waste & Dairy Farm Manure Mix*	Generate energy from community waste
Baker	Processed Wood Waste: Chips, Pellets, Pucks	Replace existing heating systems
Lewiston	Municipal Wastewater	Replace existing solid waste facility
Linden	Organic Waste: MSW, Yard, Commercial Food	Generate energy from community waste

\*Note: the Lowville Study researched potential feedstock sources and the finalized mix of sources for analysis consisted of 3 non-farm sources (food processors and food vendors) and 15 dairy farm sources.

# Summary of Project Pro Formas

Annual Project Revenues and Costs - Excluding Capital Costs(1) and Financing Costs(2)				
	<u>Lowville</u>	<u>Baker</u>	<u>Lewiston</u>	<u>Linden</u>
Electricity Revenue	\$1,136,000	\$0	\$369,000	\$0
Thermal Heat Plus Electricity	\$0	\$0	\$0	\$90,117
Compost Revenue	\$0	\$0	\$33,000	\$4,000
Commerical Greenhouse	\$0	\$0	\$0	\$70,000
Carbon Dioxide Industrial Gas	\$0	\$0	\$0	\$5,880
Tipping Fees	\$951,000	\$0	\$0	\$75,000
Operating Revenue	\$2,087,000	\$0	\$402,000	\$244,997
O&M Costs	(\$348,000)	(\$54,644)	(\$1,283,000)	(\$212,000)
Avoided Costs-Existing Facility	\$0	\$103,200	\$1,662,000	\$0
Transportation Costs	(\$1,150,000)	\$0	\$0	\$0
Operating Costs	(\$1,498,000)	\$48,556	\$379,000	(\$212,000)
Net Operating Revenue	\$589,000	\$48,556	\$781,000	\$32,997

(1) Estimated Capital Cost      \$1,628,000    \$16,300,000    \$1,479,000    \$6,792,000

(2) Estimated Financing Costs will be considered in this analysis.

Notes: Lowville pro forma is for Electricity Sale (best option) at 14¢ per kWh scenario using average values, with tipping fees assumed to be \$14 per ton (estimated break-even amount), which was determined to be feasible given the local landfill reportedly charged \$60 per ton. Baker pro forma is for Option B3 Processed Wood Chips (best option) 100% Financing scenario. Linden pro forma is for 5 TPD (serving the Linden region) Scenario 2 (best option) low cost estimate scenario, with tipping fees assumed to be \$50 per ton, the high end of the competitive tipping fee range.

# Goal of Our Review

- **Of the four studies, only Lowville’s study determined that the AD system was economically feasible in supporting capital and financing costs.**
  - **The other studies determined grants were needed.**
- **How would alternative project financing methods change the economics of the projects?**
  - **Let’s look in detail at Lowville’s study using alternative financing options.**
  - **Then we will look at a summary of the alternative financing options applied to all four studies.**



# Methods to Analyze Financing Options

## ■ Cash Flow Analysis

- Analyzes financial benefits year-to-year
- To compare cash flow across multiple studies, we focus on the first year's cash flow
  - » Most significant for feasibility
  - » Indicator of future years



## ■ Net Present Value (NPV) Analysis

- » Converts cash flow stream into “today’s dollars” after accounting for inflation
- » Tells us the long-term value of the cash flow

# 8 Financing Options Fit Into 3 Categories

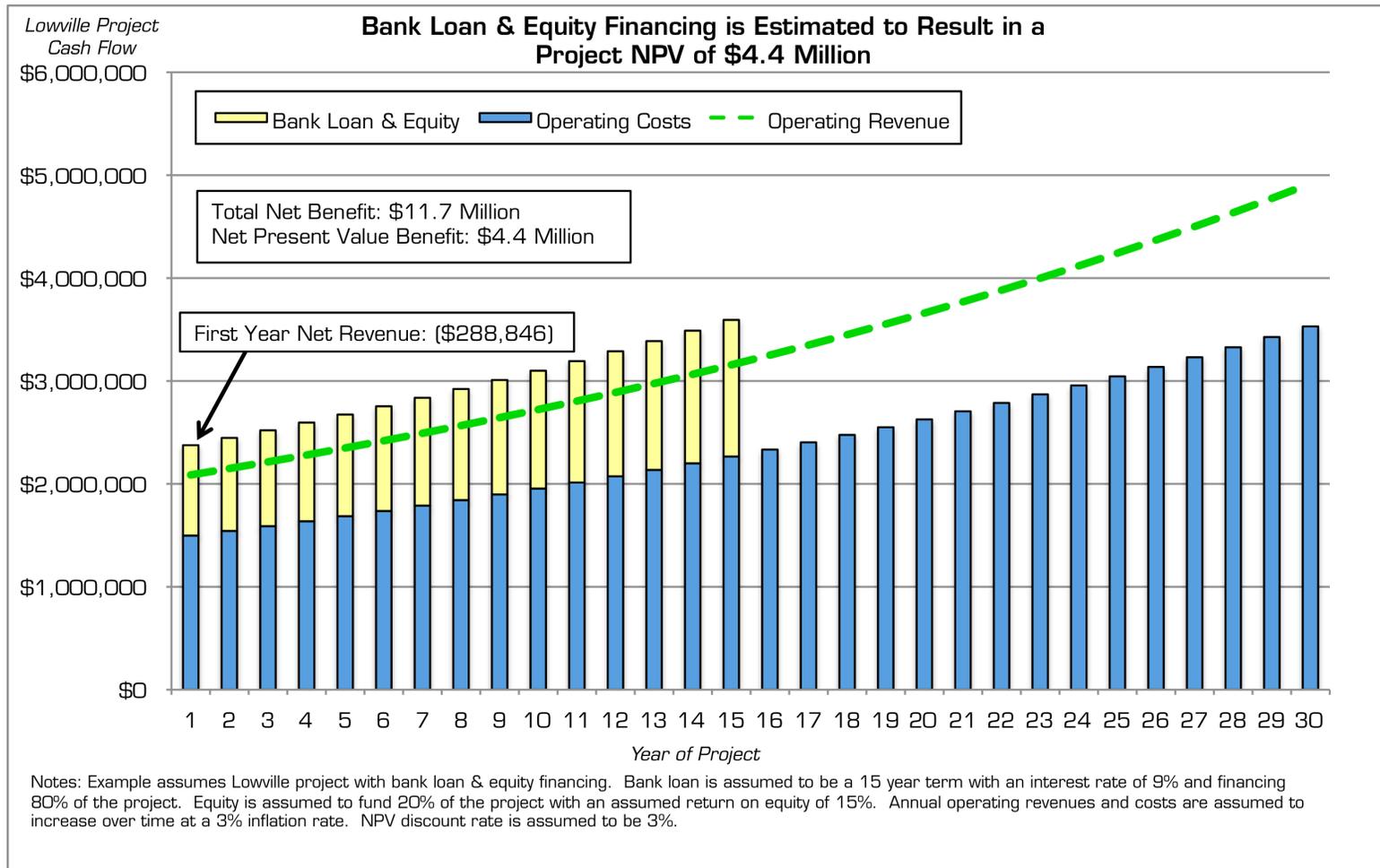
- |                       |   |   |
|-----------------------|---|---|
| 1) Private            | } | (a) Bank Loan & Equity<br>(b) Private Activity Bond & Equity  |
| 2) Publicly Supported | } | (c) 100% Private Activity Bonds<br>(d) CalRecycle RMDZ Loan Program<br>(e) New Markets Tax Credits Financing  |
| 3) Public             | } | (f) Traditional Public Financing<br>(g) 70% Federally Subsidized Bonds<br>(h) 100% Federally Subsidized Bonds |

# Financing Option #1: Private

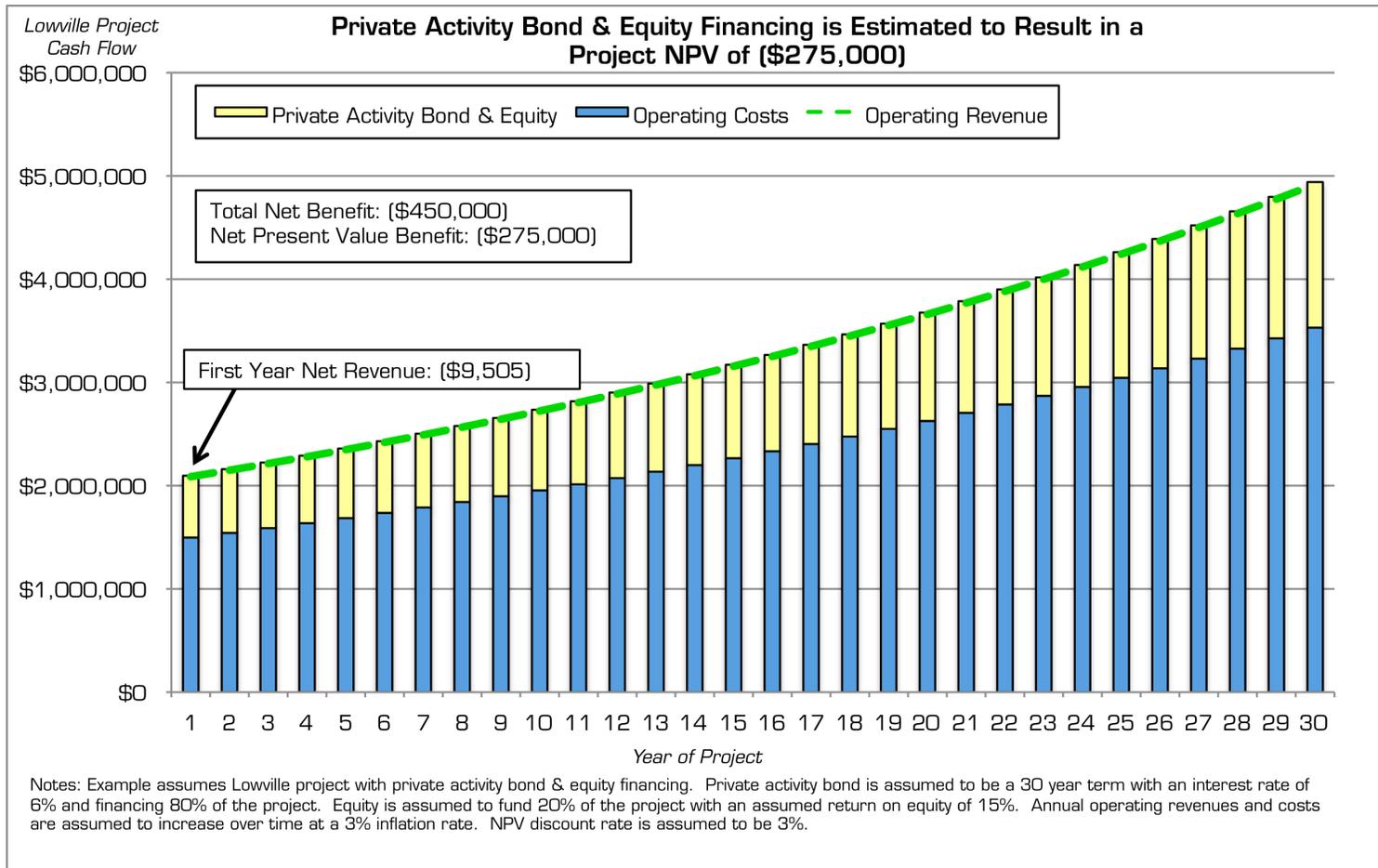
## ■ Private Owner with Private Financing and/or Equity

- (a) Traditional bank loan & equity
- (b) Publicly issued private activity bonds & equity
  - » Interest on bonds is tax-exempt (lower interest rates)
  - » Can be issued by a conduit agency such as:
    - California Pollution Control Financing Authority
    - California Statewide Communities Dev. Authority
  - » Can be issued by a public agency with approval from:
    - California Debt Limit Allocation Committee

# Traditional Bank Loan & Equity Results



# Private Activity Bond & Equity Results

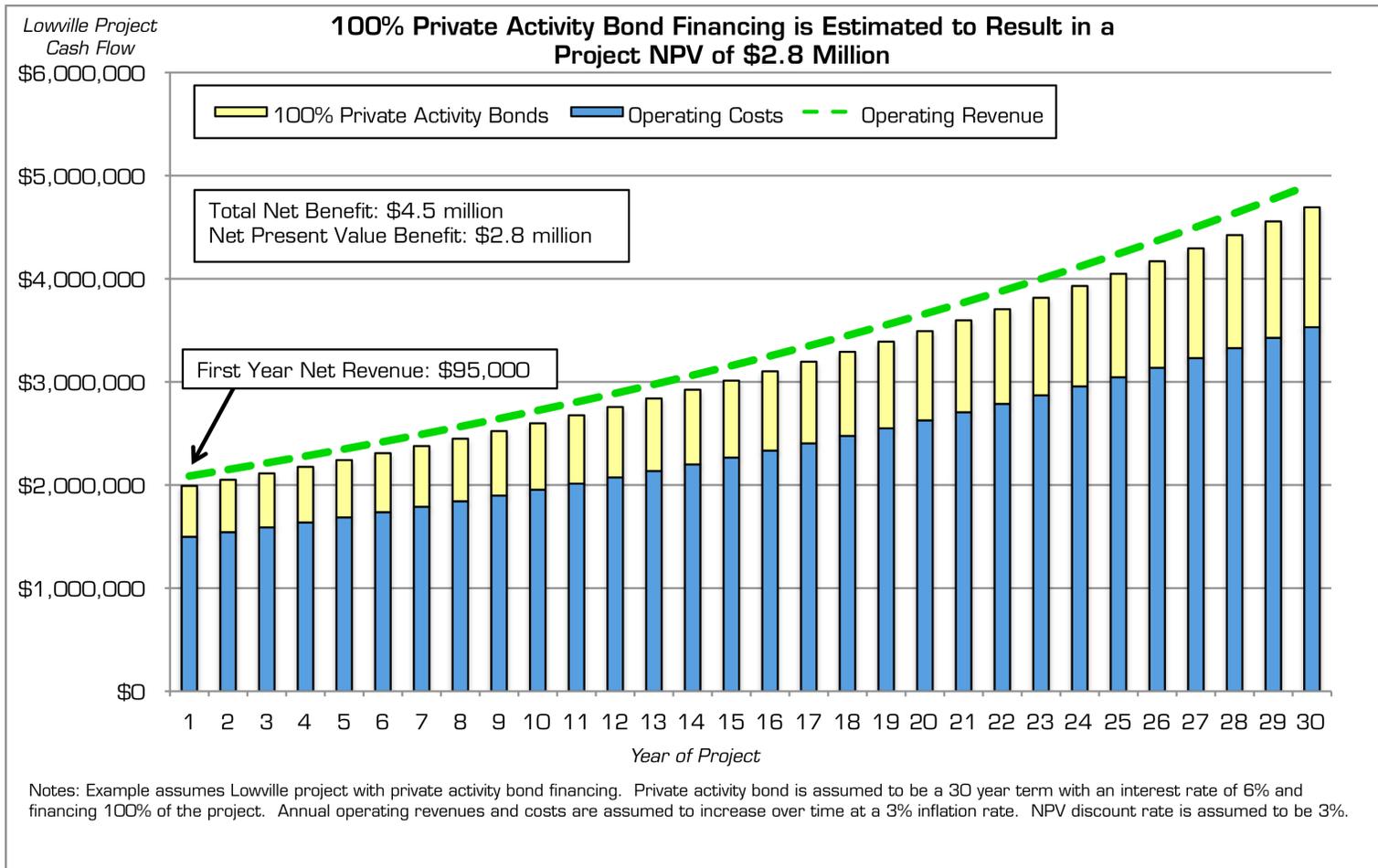


# Financing Option #2: Publicly Supported

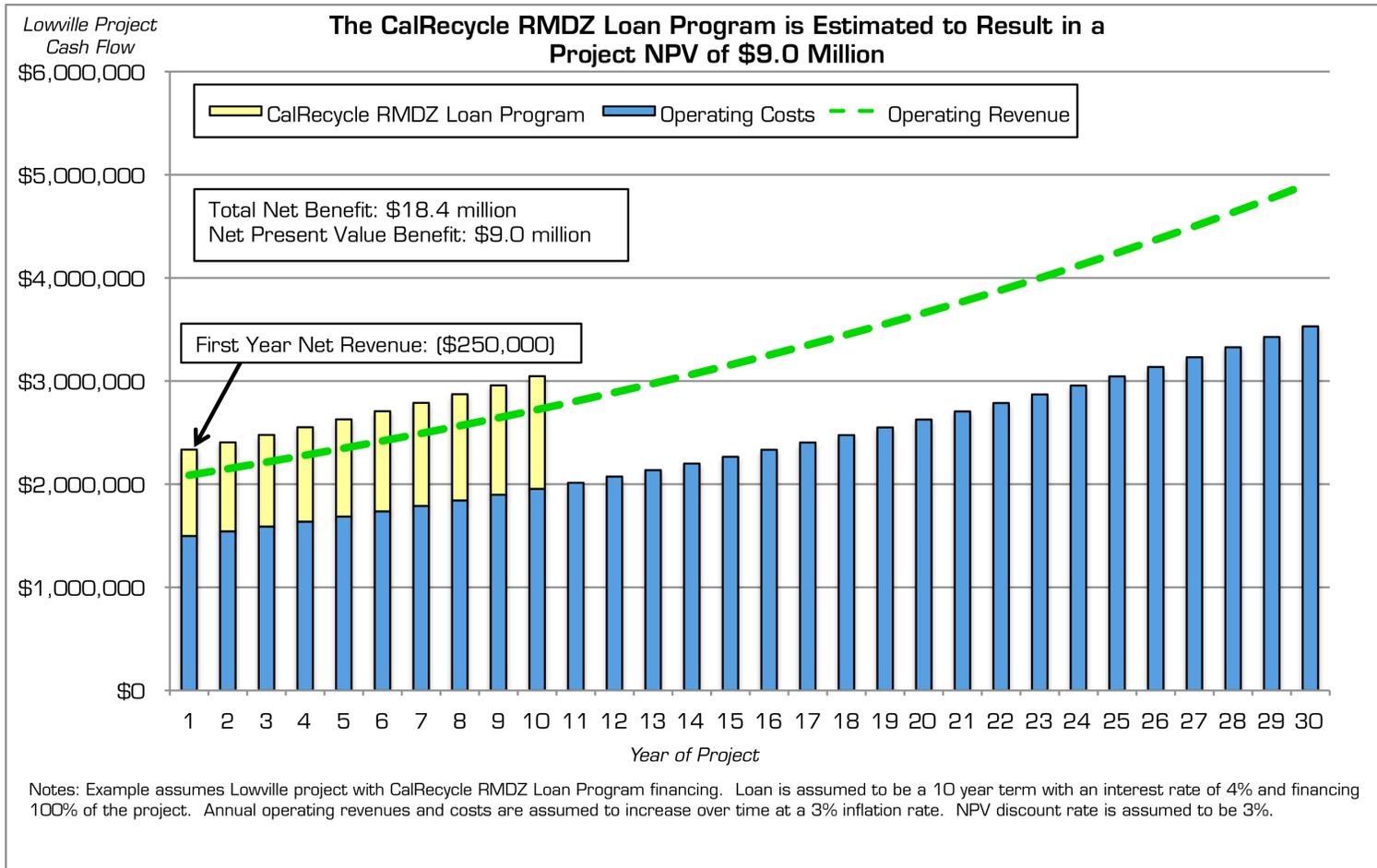
## ■ Private Owner with Publicly Supported Financing

- (c) 100% private activity bonds (State supported)
- (d) CalRecycle Recycling Market Development Zones (RMDZ) Loan Program (State supported)
  - » Subsidized interest rate
  - » Borrower limited to a maximum of \$3 million
- (e) New Markets Tax Credits (Federally supported)
  - » Tax credit to lender “buys down” the interest rate
  - » Project location must meet certain low income criteria

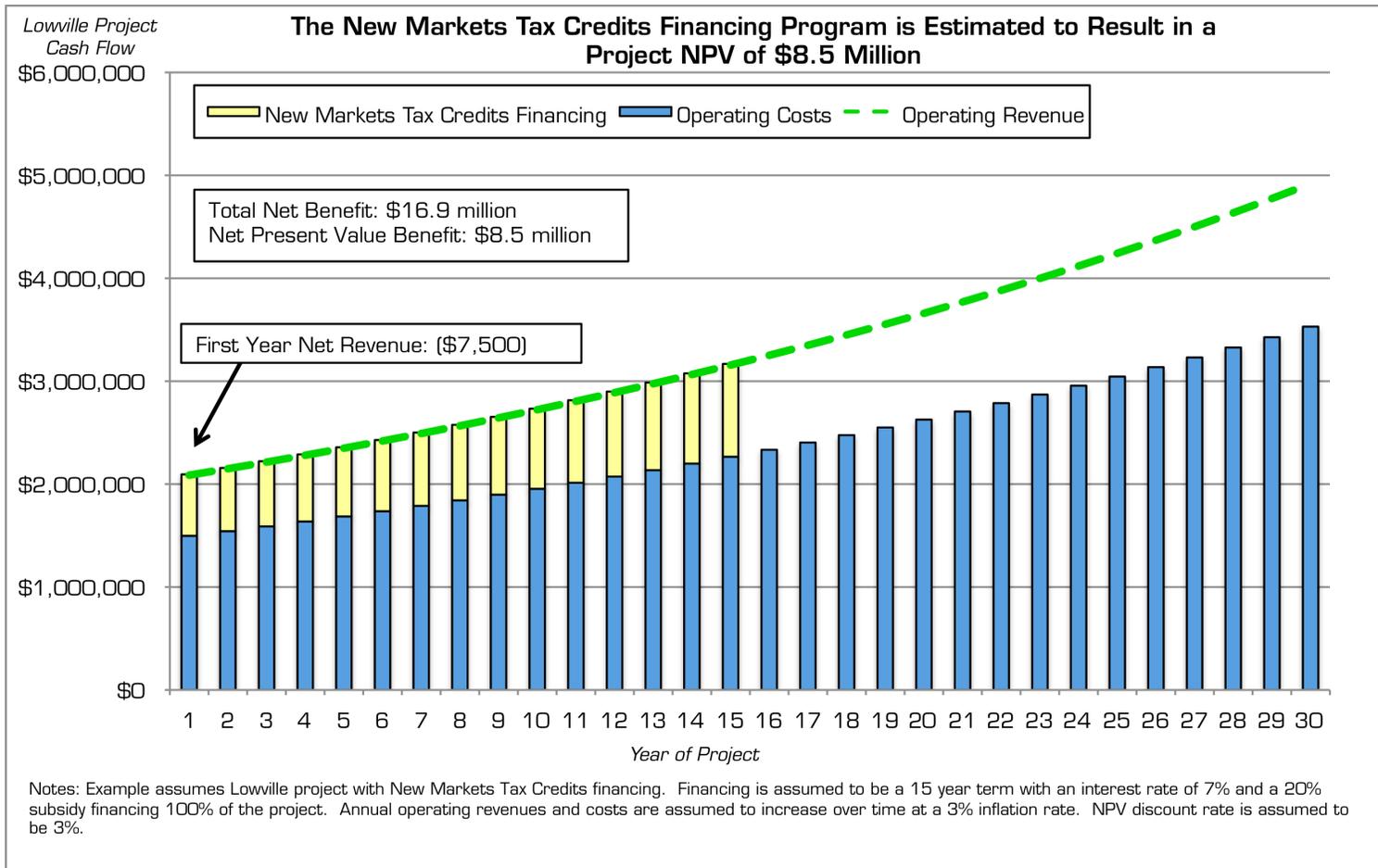
# 100% Private Activity Bond Results



# CalRecycle RMDZ Loan Results



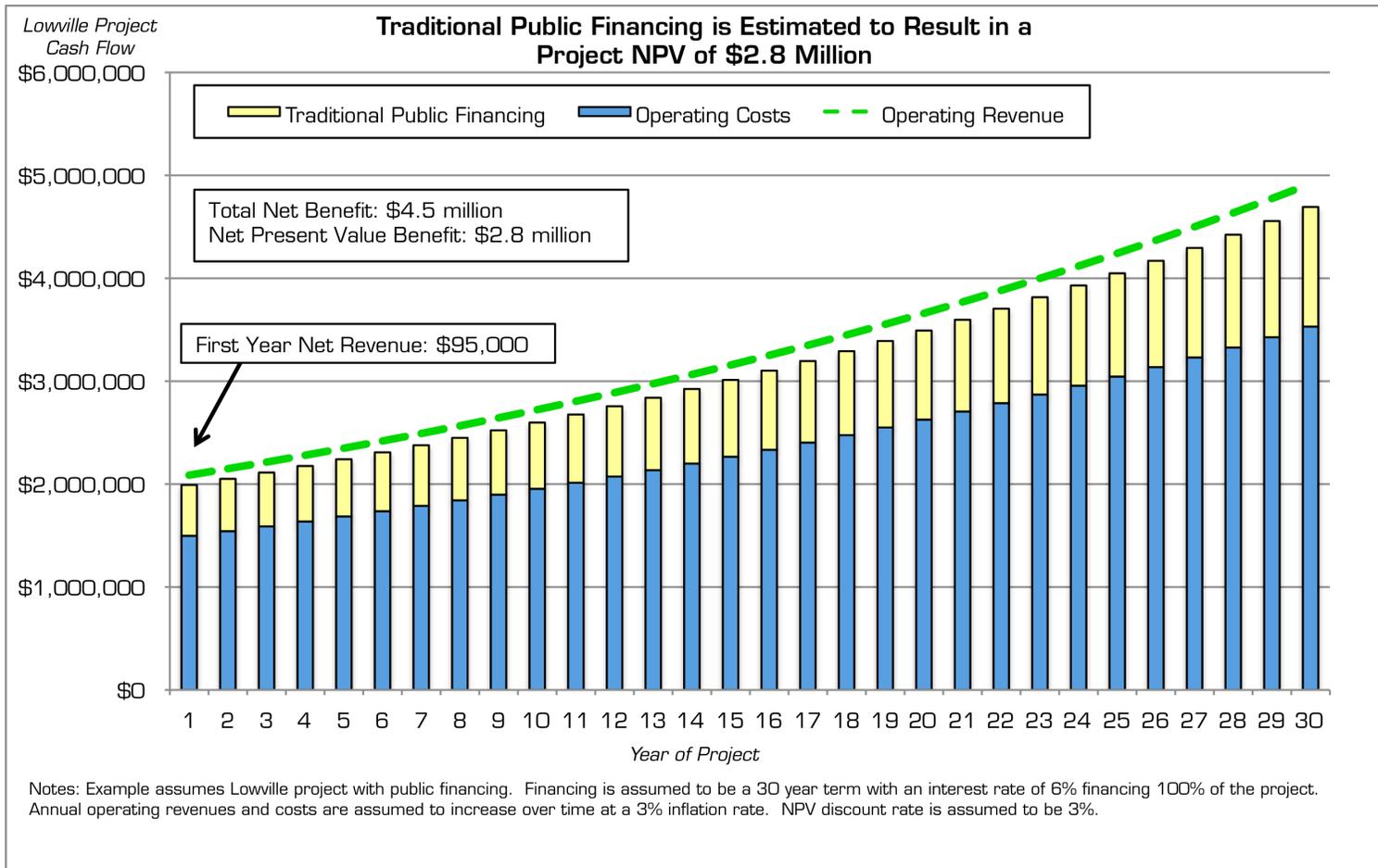
# New Markets Tax Credits Financing Results



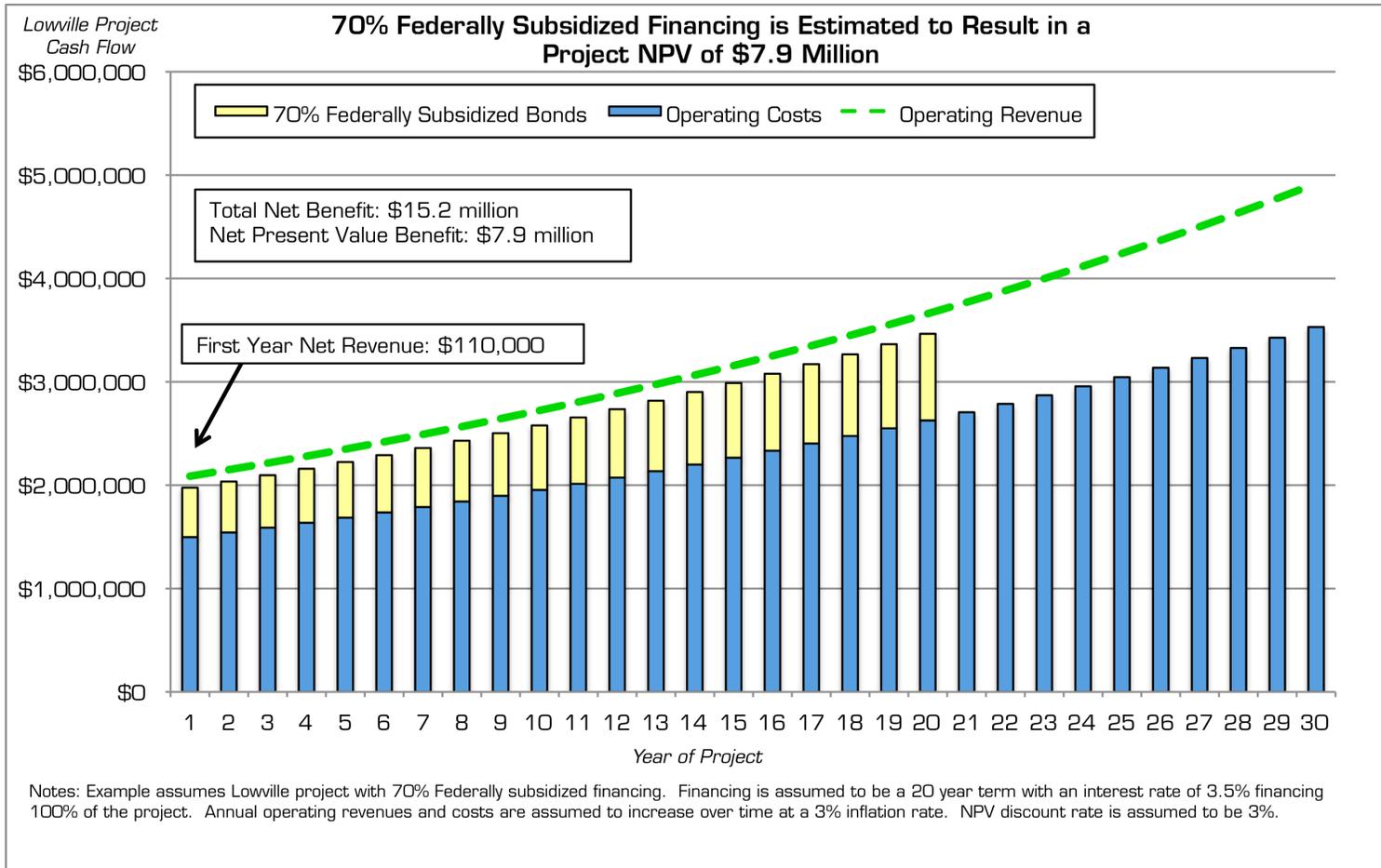
## **Financing Option #3: Public**

- **Public Owner and/or User with Private Partner**
  - (f) **Traditional Public Financing**
    - » **Public agency owns and uses system**
  - (g) **70% Federally Subsidized (Allocations Made)**
    - » **Clean Renewable Energy Bonds**
      - **Requires public owner but can be private user**
    - » **Qualified Energy Conservation Bonds**
      - **Primarily public, limited amounts can be private**
  - (h) **100% Federally Subsidized (Allocations Available)**
    - » **Qualified Zone Academy Bonds**
      - **Public or private owner and user**
      - **Requires public use for educational purposes**

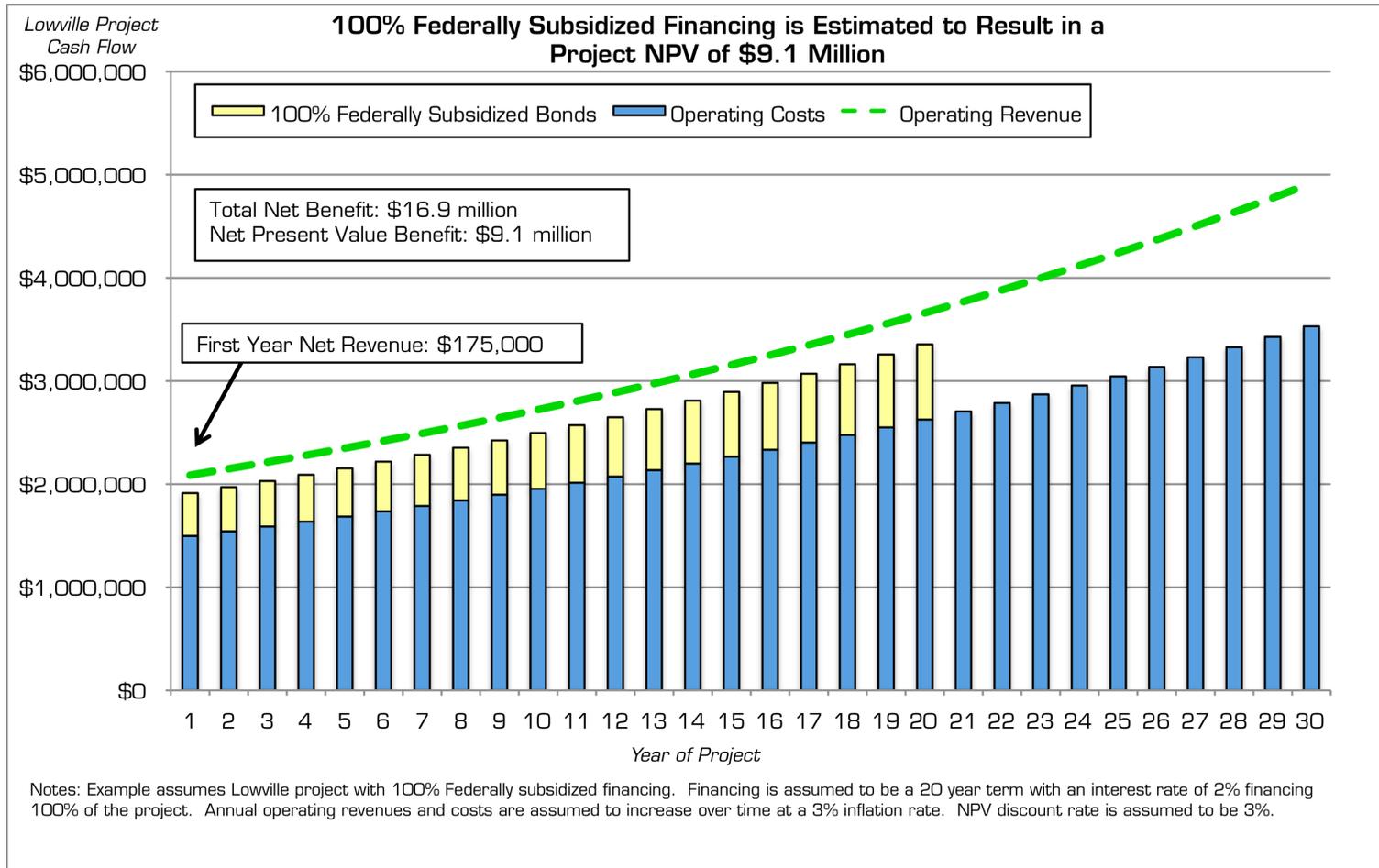
# Traditional Public Financing Results



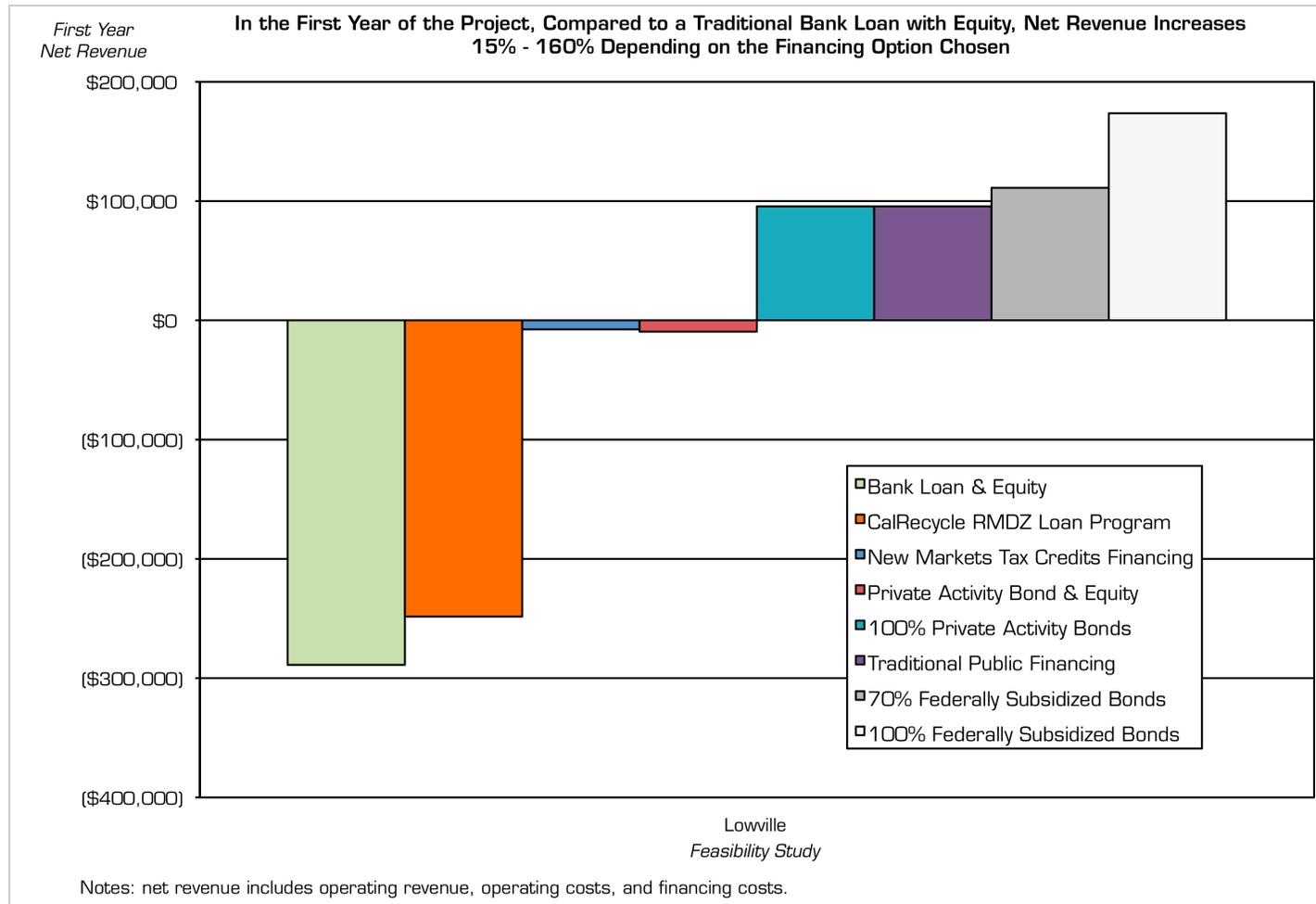
# 70% Federally Subsidized Financing Results



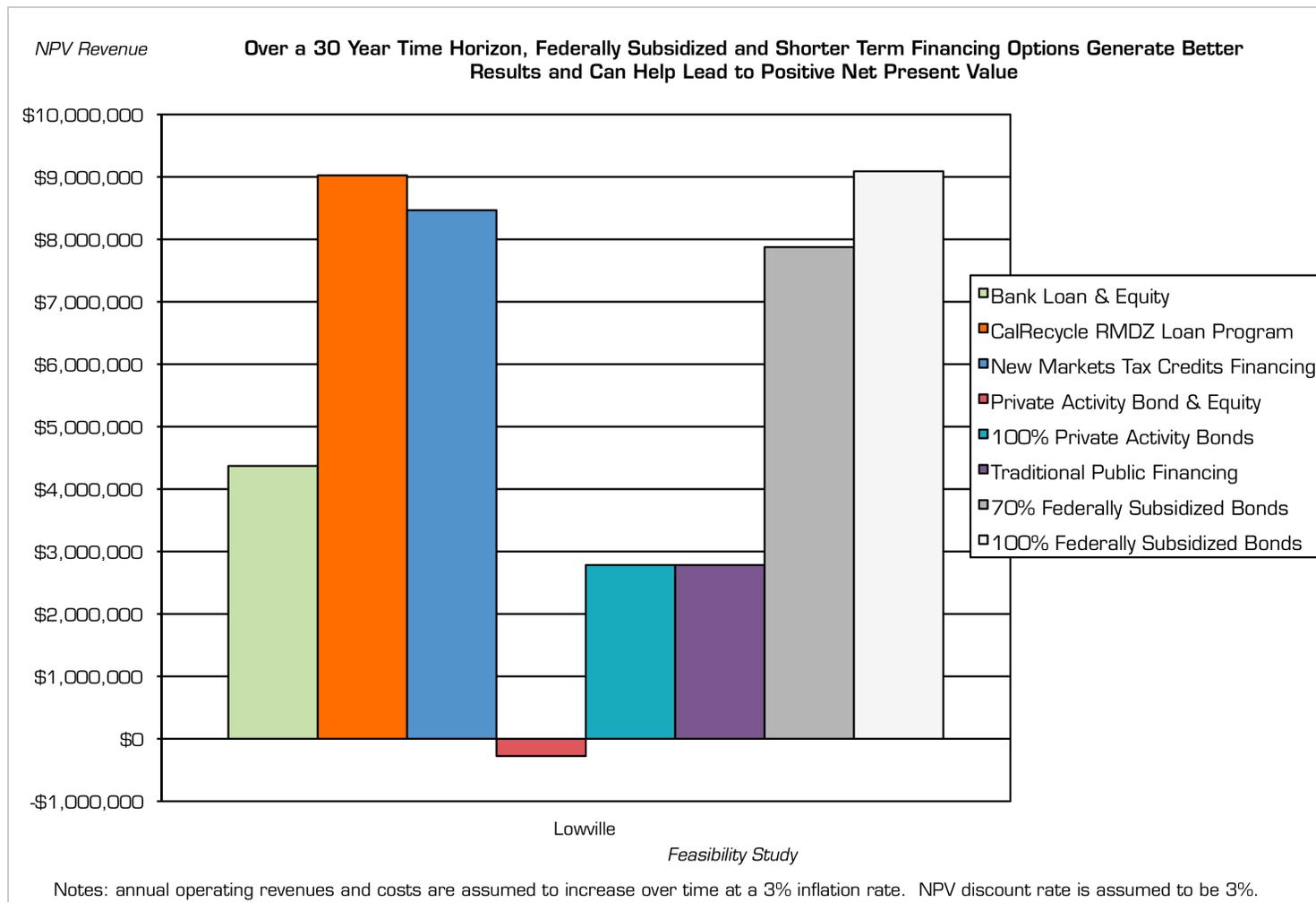
# 100% Federally Subsidized Financing Results



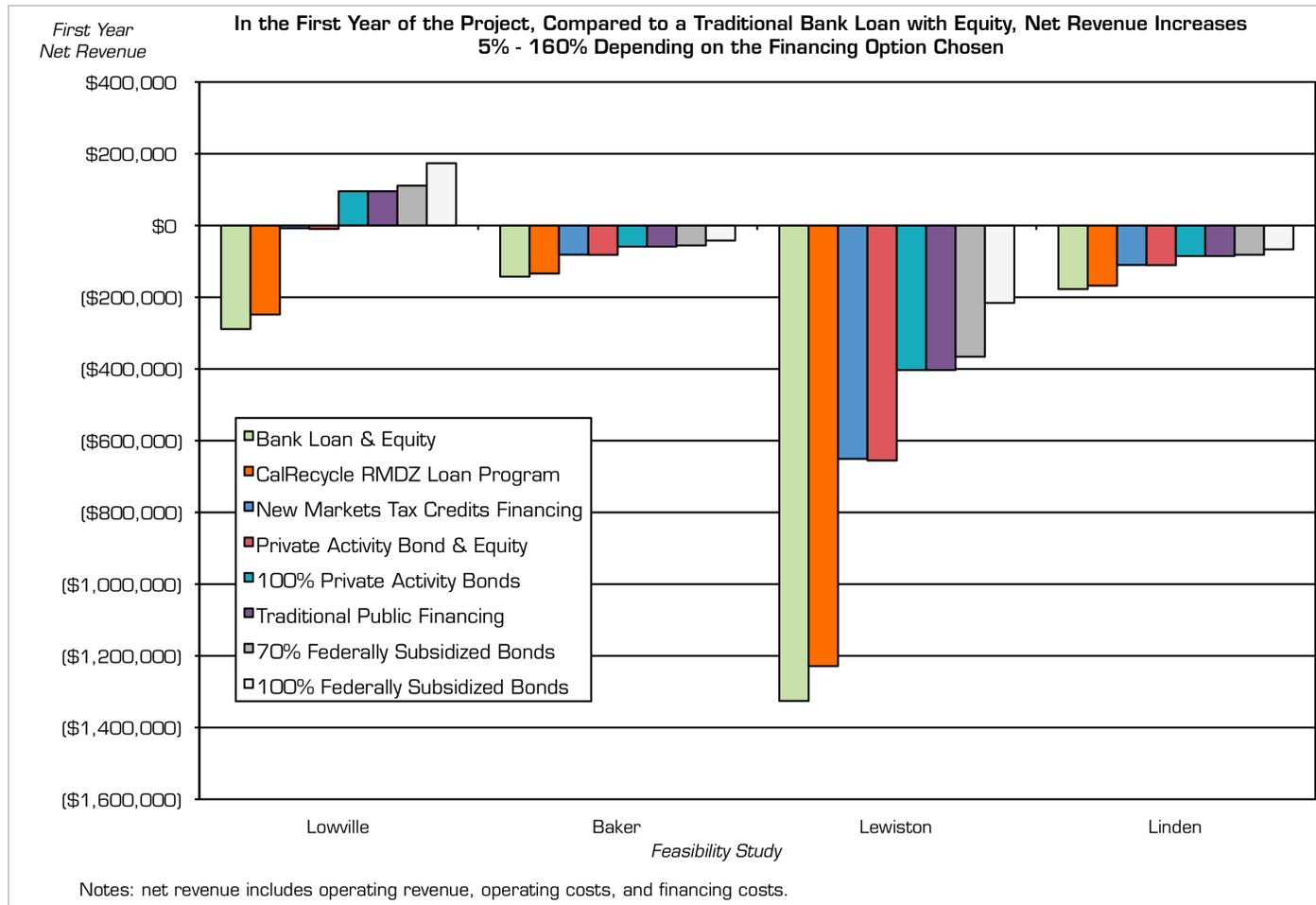
# Lowville Summary – First Year Cash Flow



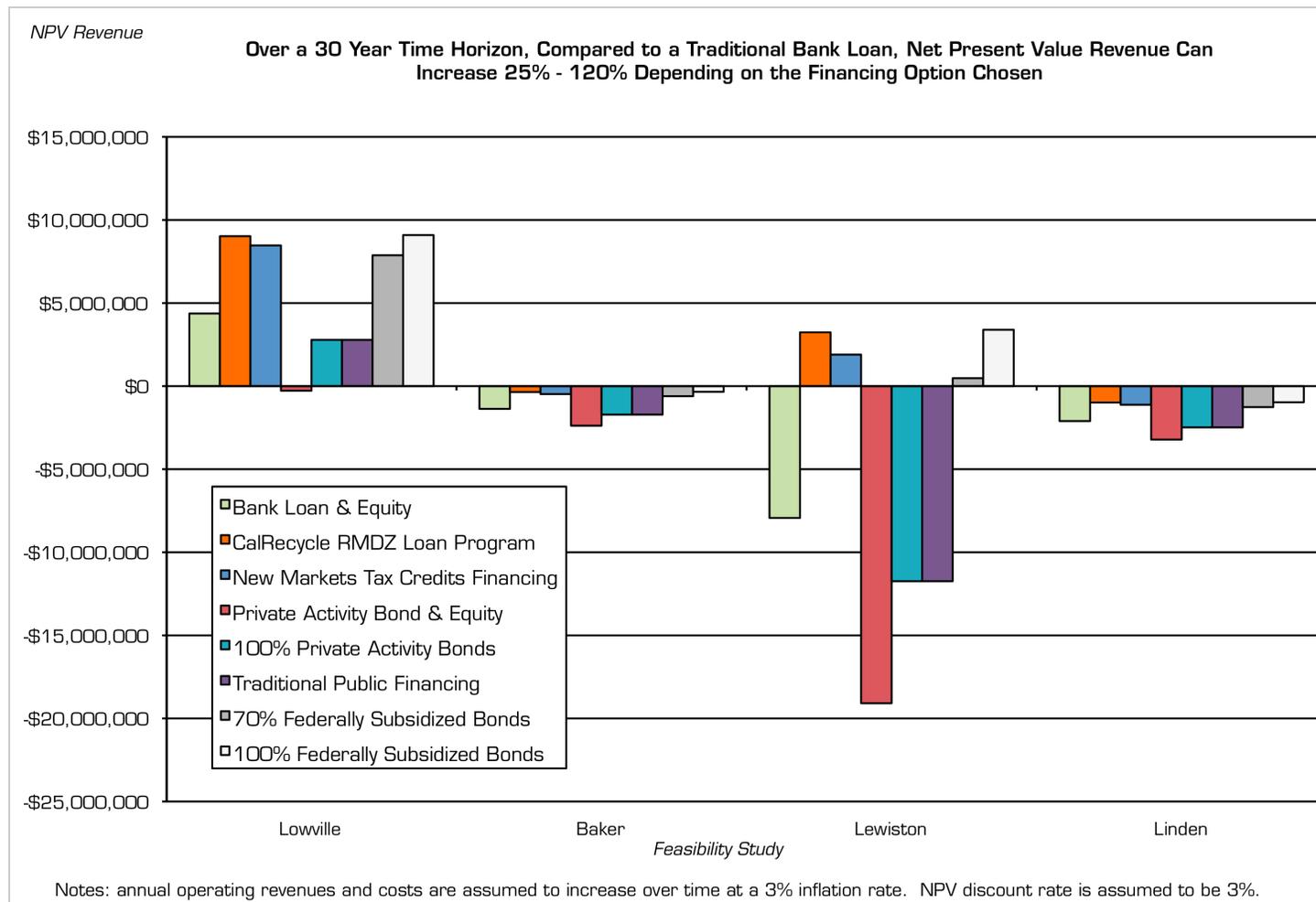
# Lowville Summary – NPV Analysis



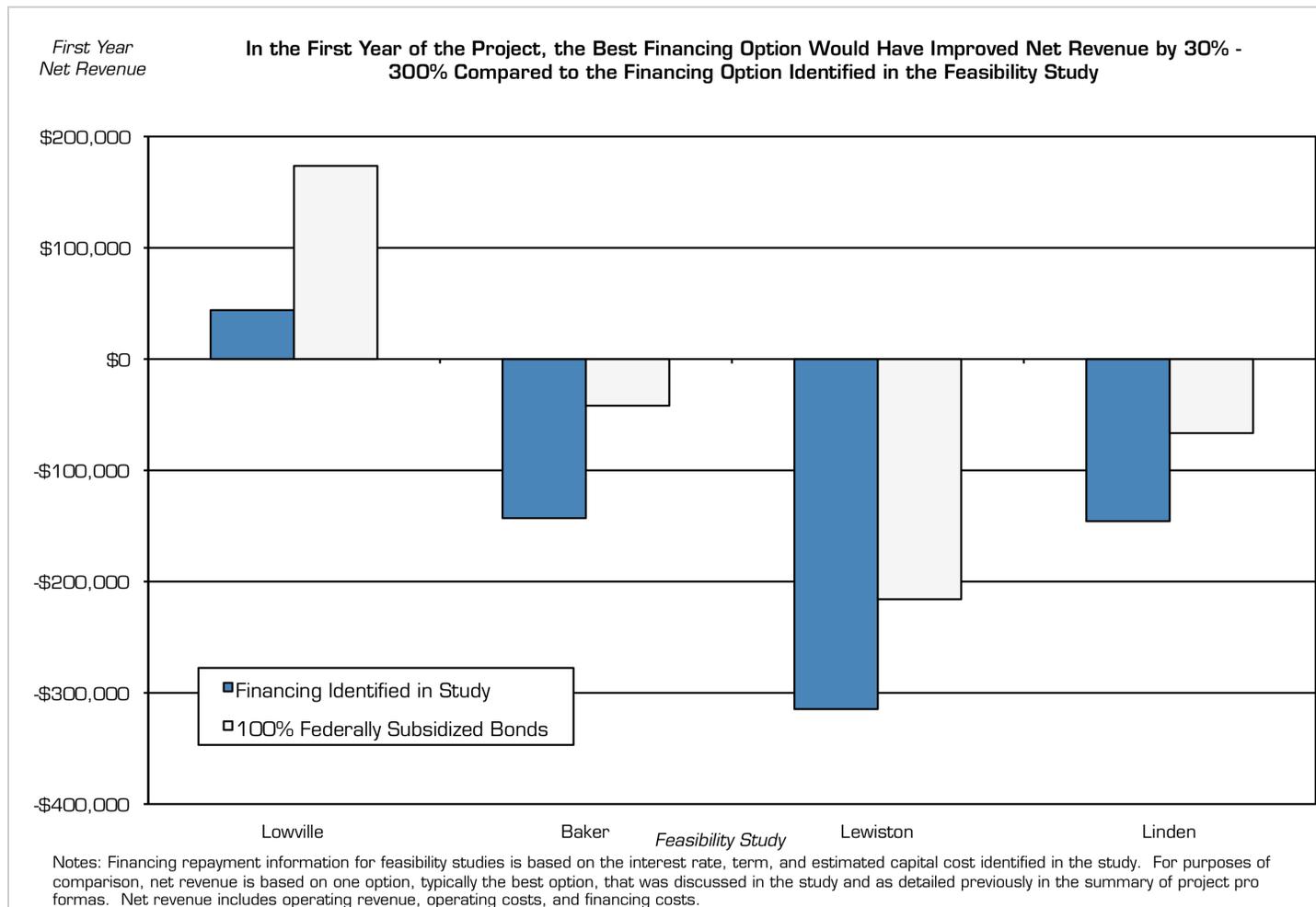
# All Studies – First Year Cash Flow



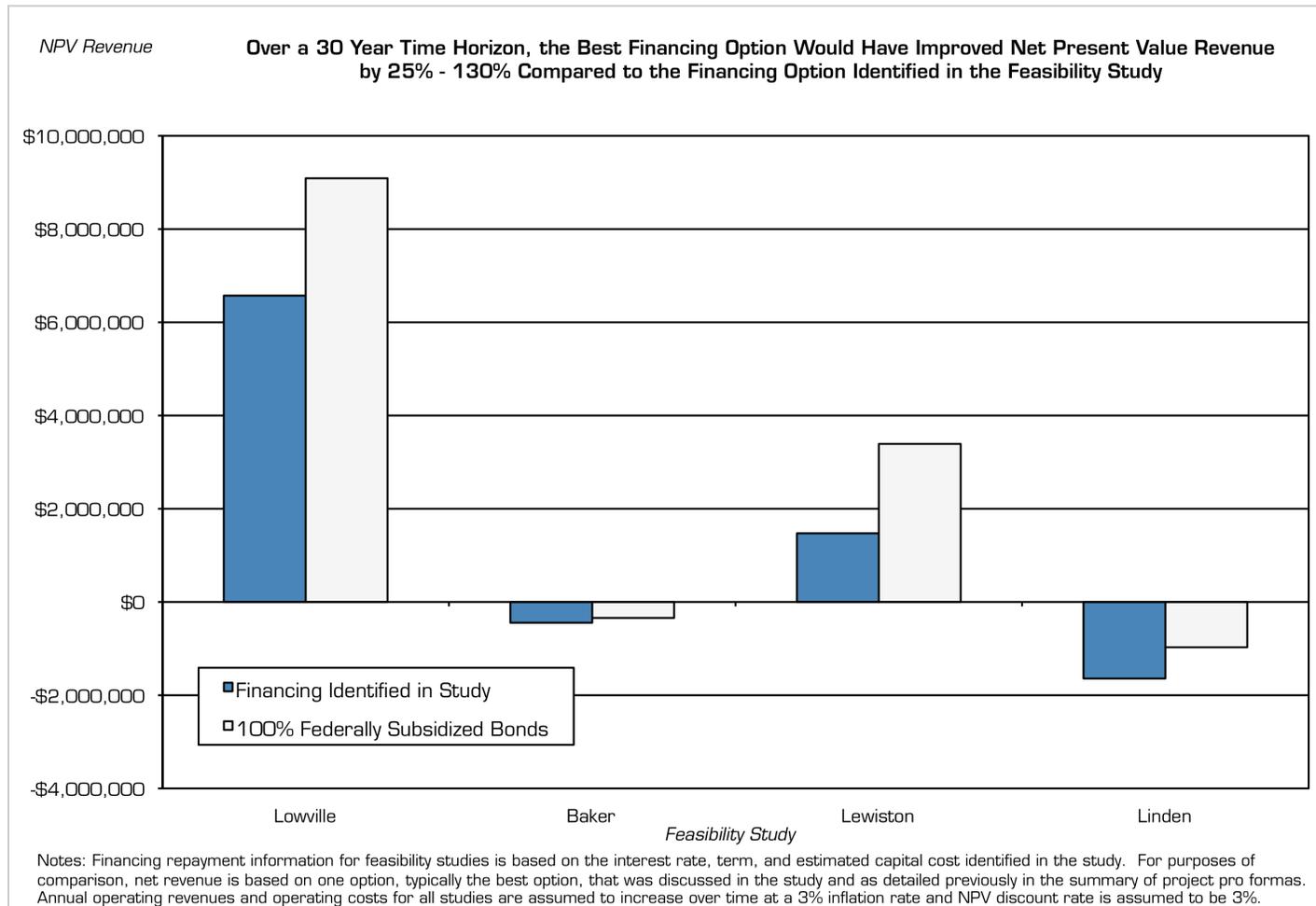
# All Studies – NPV Analysis



# Best Option's Cash Flow is > than Studies



# Best Option's NPV is > than Studies



# Conclusion

- **Many financing options are available for projects.**

- **Key financing considerations are:**

- **Interest Cost, Term, Qualifying Criteria**

- **Project feasibility metrics include:**

- **Cash Flow and Net Present Value Savings**

- **Improved cash flow and substantial NPV savings can be achieved with alternative financing options.**

- **For maximum feasibility, projects should endeavor to utilize 100% Federally Subsidized Financing.**



# Questions?

