



YESTERDAY, TOMORROW AND FINANCE
2020 CSMFO ANNUAL CONFERENCE
JANUARY 28-31, 2020
DISNEYLAND CA



Optimizing Water Revenues with Advanced Metering Infrastructure



Kevin Barnes

Sr. Solution Specialist

CA-NV AWWA Section

- Co-Chair of Awards Committee
- Secretary Engineering Division Committee
- Secretary of Small Utilities Committee

Email: kevin.barnes1@ferguson.com

UTILITY CONCERNS



OPERATIONAL
EFFICIENCY



REVENUE
PROTECTION



CONSUMER
ENGAGEMENT



WATER
EFFICIENCY



SYSTEM
INTEGRITY



INFORMED DECISION
MAKING



INTELLIGENT INCIDENT
RESPONSE



SUSTAINABILITY



SAFETY

Value beyond the meter read...

Value

Partnership

Performance

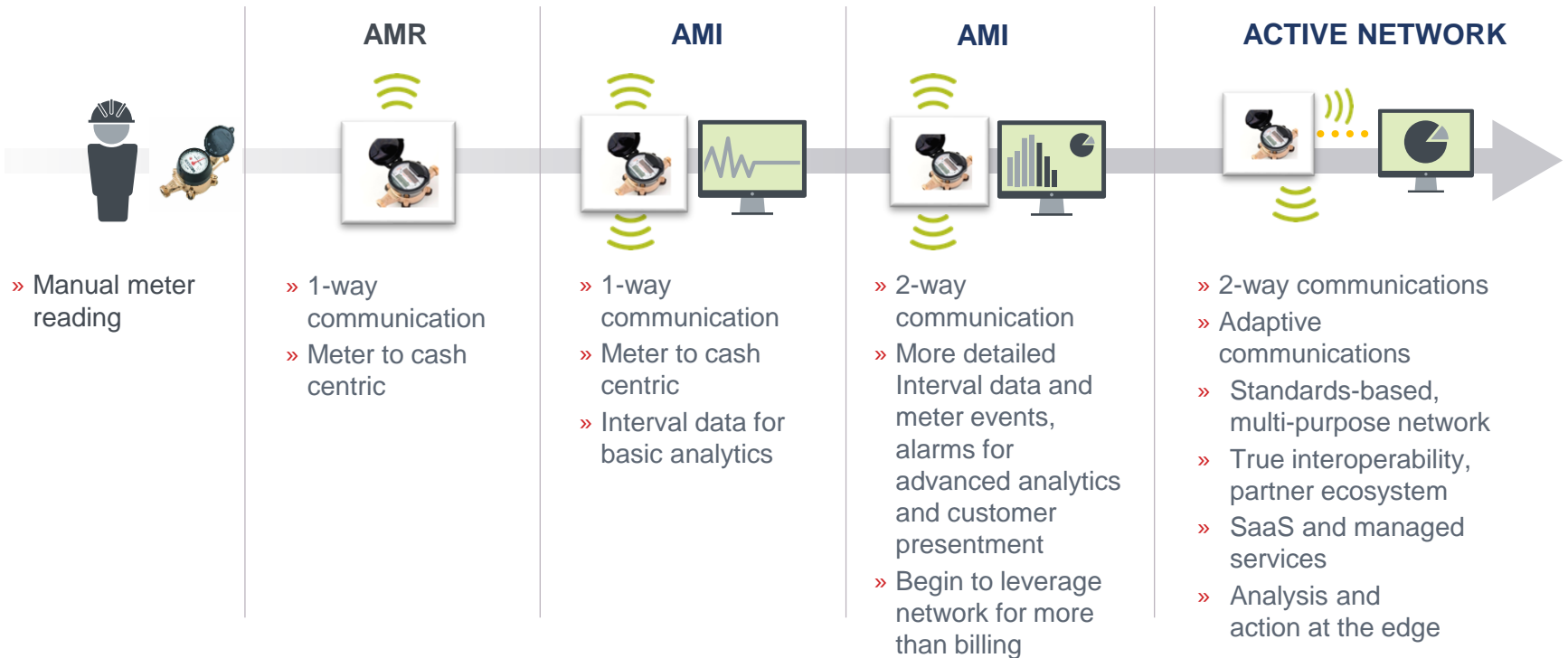
PROVEN PRODUCTS + STRONG PARTNERS + AVOIDING COMMON CONCERNS

= VALUE

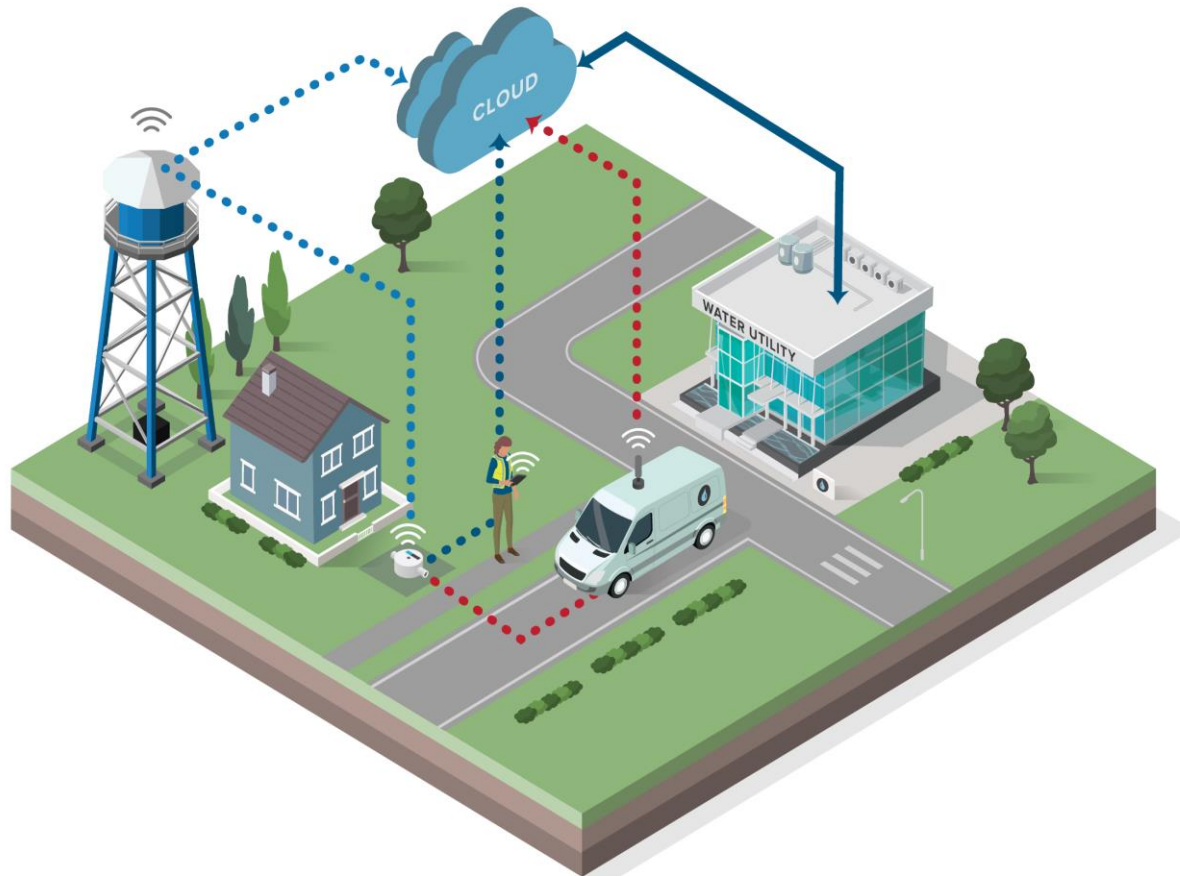


20-YEAR RETURN ON YOUR INVESTMENT

TECHNOLOGY EVOLUTION

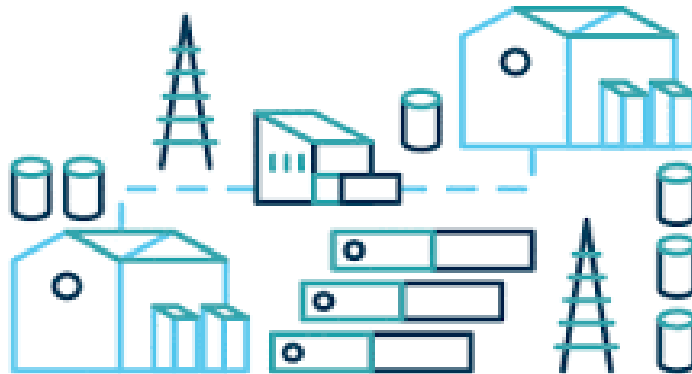


HOW IT WORKS



WHAT IS NEEDED TO MOVE TO AMI

- **DATA!**
- **INFRASTRUCTURE!**
- **ASSETS**
- **STRONG PARTNERS**



DOES IT ALL NEED TO FIT IN 1 BOX??

- Density
- Topography
- Functionality
- **Hybrid**
- Commercial vs Residential



PROCESS IMPROVEMENT

MARKET DRIVERS

OPERATIONAL EFFICIENCY

- » **Optimized & efficient meter reading**
- » Prioritize workload
- » Eliminate truck rolls
- » Remote disconnect



OPERATIONAL
EFFICIENCY



REVENUE
PROTECTION

REVENUE PROTECTION

- » Deter water theft
- » Tamper & advanced meter alerts
- » Event/tamper analysis
- » **Advanced reporting**
- » Identify, prioritize & take action

WATER EFFICIENCY

- » Enhanced distribution leak detection
- » **Reduce non-revenue water**
- » Additional sensing options
- » Robust data analytics



WATER
EFFICIENCY



CONSUMER
ENGAGEMENT

CUSTOMER ENGAGEMENT

- » Customer service app
- » Consumption comparisons
- » **Customer engagement web portal**
- » Customer leak alerts

Price & Value

Partnership

Performance

ADVANCED METERING INFRASTRUCTURE

DATA STORAGE & ANALYSIS



Customer Service

Customer Portal

Revenue Protection

Non-Revenue Analysis Distribution Loss Analysis

DATA PROCESSING



Network Software

Security Software

DATA COLLECTION



Gateway

DATA CREATION



Water Meter

BILLING & THIRD PARTY APPS



CIS/Billing



3RD Party Apps



GIS
WFM
SCADA
DCS

Price & Value

Partnership

Performance

THE PITS- KNOW WHATS IN THE FIELD

PIT IS TOO DEEP



PIT IS FLOODED



UNKNOWN CABLES



Customer Service – No use on an active account???

Typical Findings – customer “adjustments” have been made



Price & Value

Partnership

Performance

REDUCING NON-REVENUE WATER LOSS (NRW)

ADVANCED LEAK DETECTION THROUGH ANALYTICS

- METERED LEAK REPORTS
- NO USAGE ON ACTIVE
- USAGE ON INACTIVE
- THEFT DETECTION
 - TAMPERS
 - REVERSE FLOWS

PROACTIVE DATA MANAGEMENT

AMI has changed perspective and results

- Advanced Leak Detection using hourly data
- Adjustable leak threshold by meter size, by flow volume, by duration
- Estimated reads all but eliminated
- Opt-outs read quarterly



Price & Value

Partnership

Performance

DISTRICT METERING

- Aggregate to determine non-revenue



AT THE METER

Price & Value

Partnership

Performance

TECHNOLOGY EVOLUTION

Started With
E-Coder® Solid State
Register



- ▶ Guaranteed accuracy
- ▶ Leak detection
- ▶ Reverse flow indication
- ▶ Tamper detection
- ▶ Rate of flow (visual)
- ▶ High resolution

Combined Into Solid State Register With Integrated Radio



- ▶ Guaranteed accuracy
- ▶ Leak detection
- ▶ Reverse flow indication
- ▶ Tamper detection
- ▶ Rate of flow (visual)
- ▶ High resolution reading

Then Radio
Meter Interface Unit



- ▶ High power
- ▶ 20-year battery
- ▶ Rugged
- ▶ No programming needed

- ▶ No wires
- ▶ Easy to install
- ▶ Data Logging
- ▶ High power
- ▶ 20-year battery
- ▶ Rugged
- ▶ No programming needed

TECHNOLOGY EVOLUTION

Price & Value

Partnership

Performance



All-in-One Technology

Reduce Training Time with Easy-to-Install Products

- R900 simplifies the installation process
 - No programming required for register types
 - No programming to activate feature set
 - No programming to “change modes” for AMI



- E-Coder®)R900i™ is intuitive
 - No wiring
 - Easy to read – Large LCD
 - No programming required
 - E-Coder flags
 - Industry best accuracy
- 100 mW AMR signal – every 14 seconds
- 1W AMI signal – every 7.5 minutes



Value

Partnership

Performance

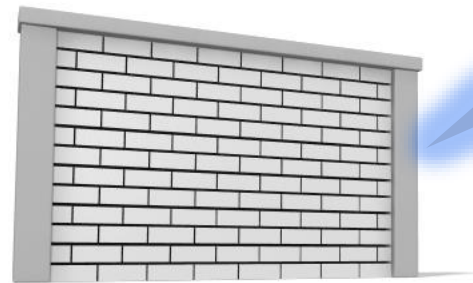
Technology Progression

Utilities May Need to Migrate From AMR to AMI or Combine New Technology in Difficult Service Areas

NEVER a Brick Wall

Remove Typical Barriers:

- Obsolete Equipment
- Incompatible Software
- Costly Forced Upgrades
- Stranded Investments
- Hidden Costs (Install, RFP)



Meter Radio
Forward...Backward
Never Stranded

Technical
Obsolesce

Forward –
Backward
Never Obsolete

ABOVE THE SYSTEM

Price & Value

Partnership

Performance

GATEWAY

**13" x 9" x 7" Minimal Visual Blight – Easy Installation
CURRENT TECHNOLOGY BACKHAUL**



Price & Value



Partnership



Performance

WHAT WILL TOMORROW BRING??



THERE IS A SOLUTION!

NaaS

There's a solution:
Managed Services

OUTSOURCING NETWORK OPERATIONS & DAY-TO-DAY
BUSINESS FUNCTIONS

- To improve operational efficiency
- To reduce operational costs
- To mitigate technology obsolescence
- To meet regulatory compliance

NaaS BENEFITS

NaaS

“Focus on the Business of Water”
Leverage Network-as-a-Service (NaaS)

Eliminate infrastructure concerns
and the burden of managing
collection devices associated with
AMI deployment



YES!

Value

Partnership

Performance

- Preserve Your Existing Investment in (x)+ Neptune Meters
- Preserve Your Current Installation, Handhelds and Your Software
- Integrated Radio – Proven, Wireless, Hassle-Free
- Error-Free Without Meter or Endpoint Programming...Ever
- Fixed and Mobile – Always On, Always Ready, Built-In Redundancy
- The End of Warranty Gimmicks
- Made in USA
- One Vendor to Streamline Installation Process and Future Maintenance
- In House Software and Installation Team of Neptune Experts
- Local FERGUSON Technical Support Without Training Fees

Water Meter Upgrade Project

Advanced Meter Infrastructure (AMI) Project



VISION

Innovative leader enhancing the vitality of Ventura

Craig Jones – PIO, Management Analyst II
General Manager's Office

AMI = Advanced Metering Infrastructure

Sustainable Water Management Technology.

SMART WATER METER

Access usage reports on-line:

- Daily Usage
- Leak Detection
- Email Notifications



Water is used
at your home
or business

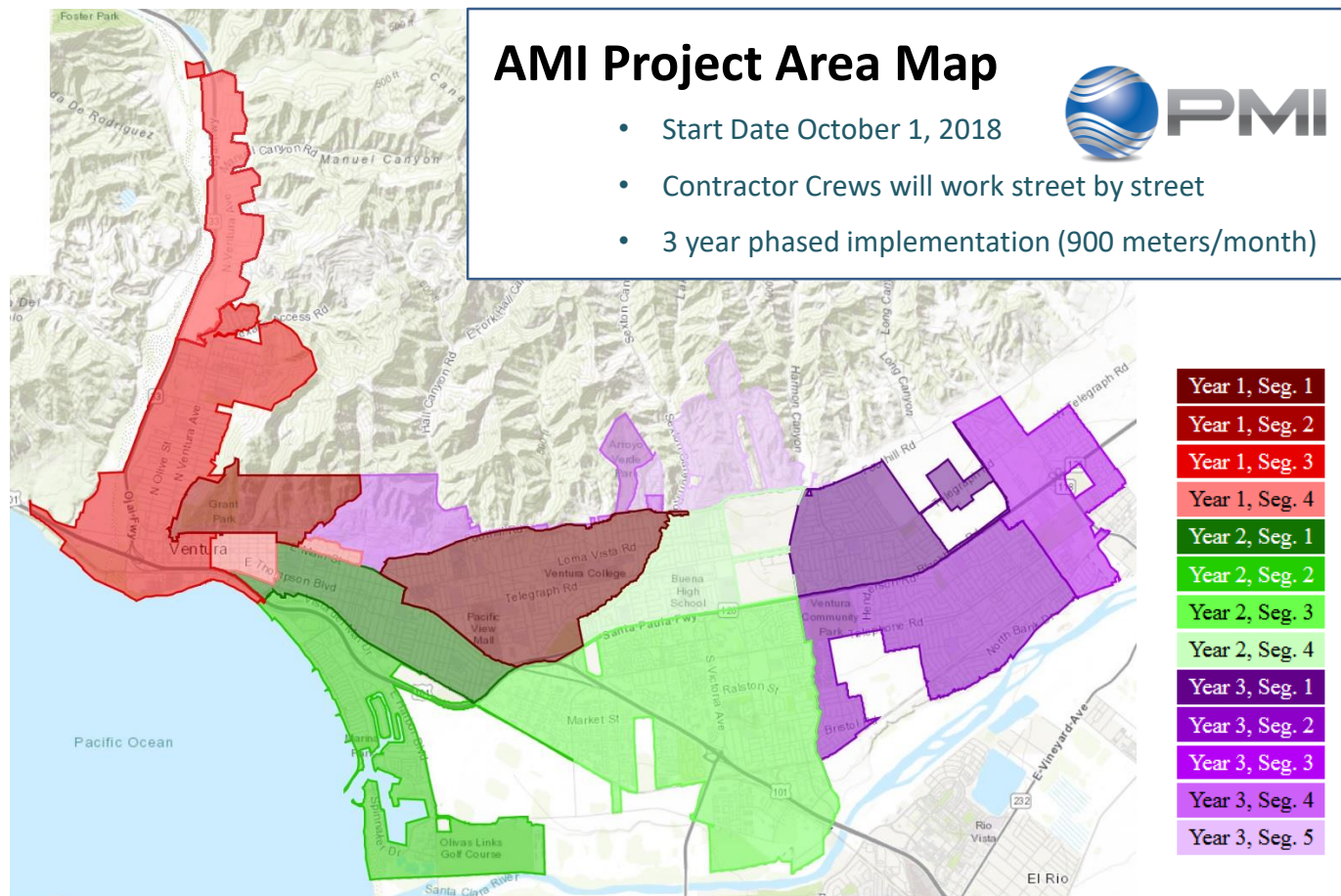


Water usage is recorded
by the smart meter and
transmitted to Ventura Water



Ventura Water uses
the information to
generate your bill

Provides Automated Meter Reads



WHAT TO EXPECT DURING THE METER UPGRADE PROCESS



Postcard with
important
information.
1 – 2 weeks



Courtesy **knock**
on the door
(Customers do
not have to be
home!)



Water will be off
about
30 minutes.



When done, a door
hanger will provide
key information

METER UPGRADE CONTRACTOR

Meter Upgrade Project Contractor



Toll Free **(866) 270-9629**

Authorized By:

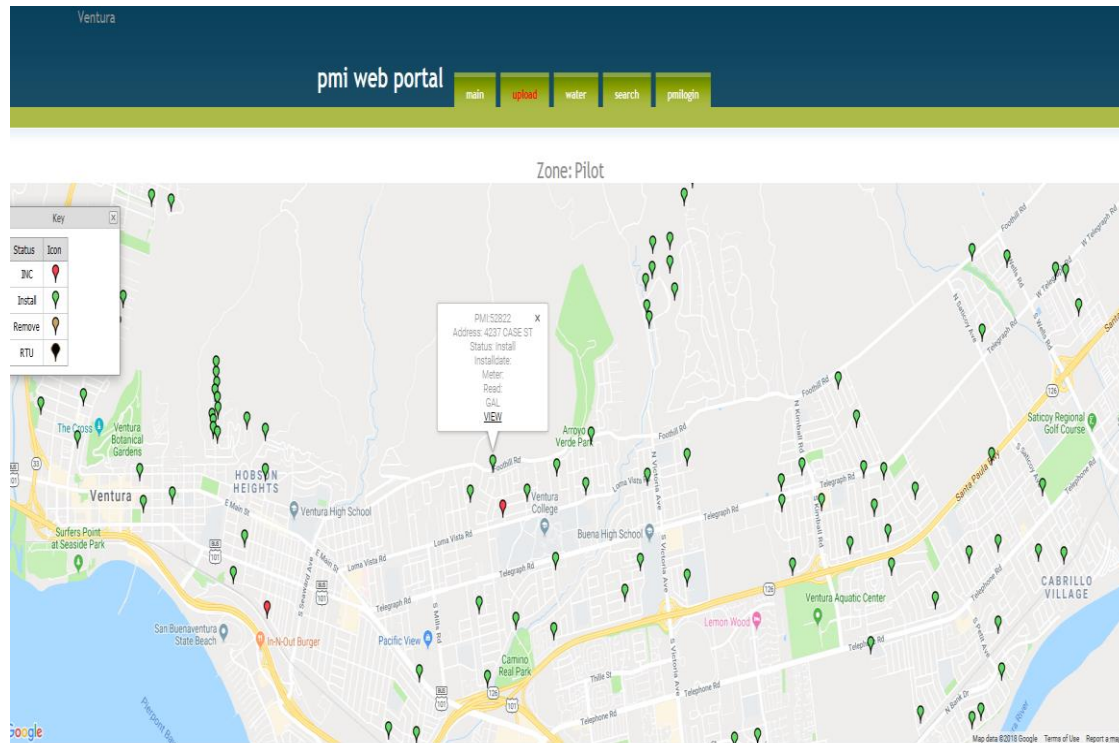


**Contractor vehicle
identified sign**



**Contractor staff is identified by
uniform shirts and ID badges**

PMI PROJECT PORTAL



PMI PROJECT PORTAL

Account Information		
PMI Number: 52822	Account Number: 30464300	Account Type: WTR
Location Code: 002046500000304640001	Customer Code: 304641500	Zone: Plot
Name: JAY M WOLF	Address: 4237 CASE ST	Job Type:
Phone1: 8056441879	Phone2:	Status: Install

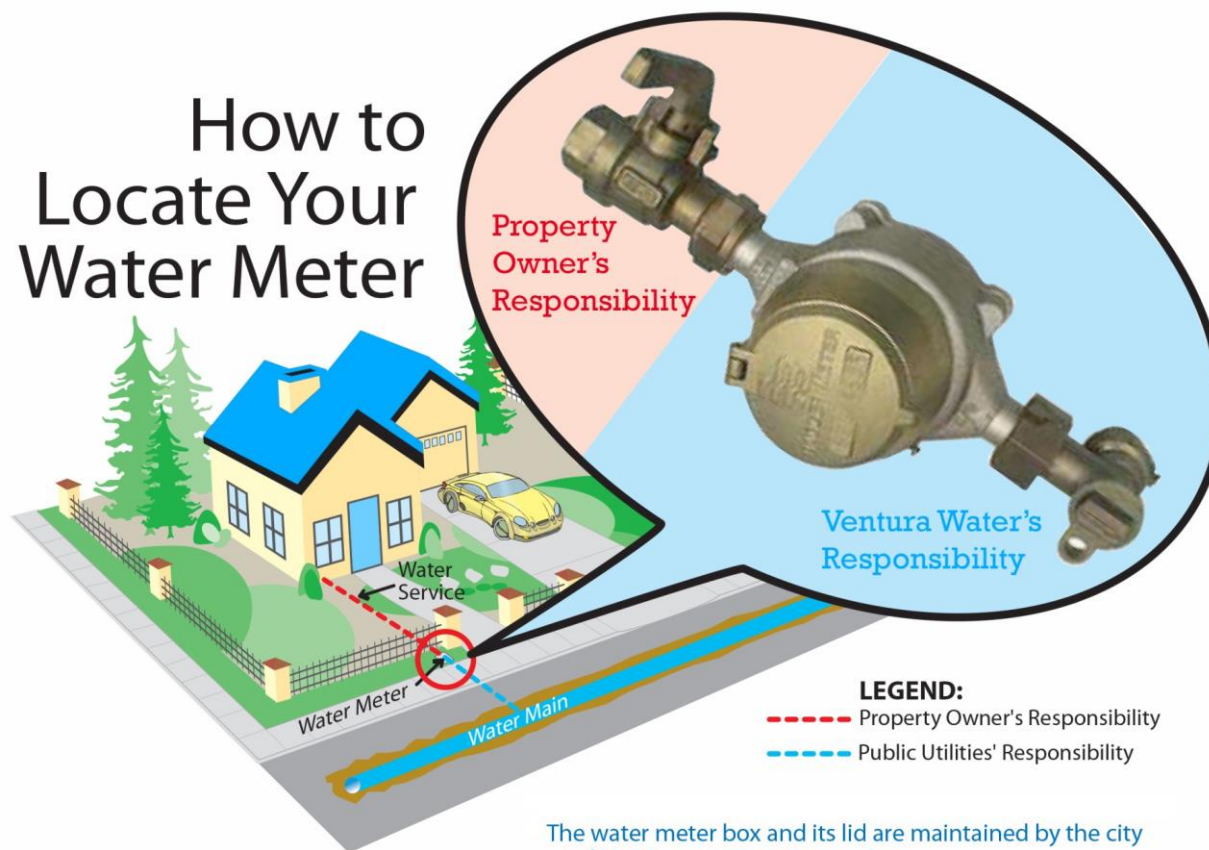
Meter Information		
Meter: 36806	Transmitter:	Last Read: 5421
Size: 3/4-inch	Install Type: WTR	Last Reading Date:
Location:		

Appointment Information	
Scheduled Date:	Scheduled Time:

Install Information		
Install Date: 10/2/2018	Out Read: 5431	Old Meter: 36806
Outside Read: 0	High Flow Read:	Low Flow Read:
Meter Size: 3/4-inch T-10	Meter: 54411684	Transmitter: 1550930168
Lid Type:		
Meter Adapter: N	New Valve:	New Coupling:
Install Notes:		Installed By: Steve M.
Latitude: 34.28193763	Longitude: -119.23918347	
City RTU Note:		



How to Locate Your Water Meter



The water meter box and its lid are maintained by the city unless it's a private water service.

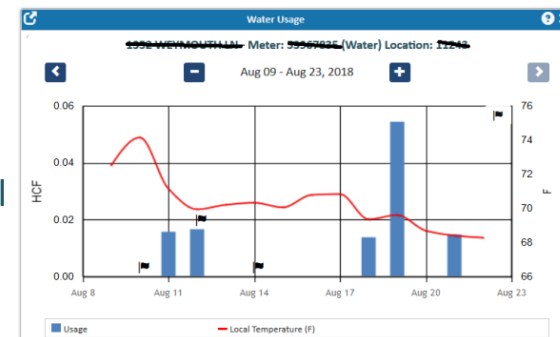
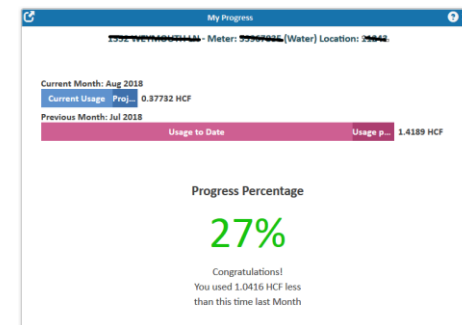
NEW METER ADVANTAGES

- ✓ Access to your water usage data
- ✓ Manage water usage
- ✓ View hourly water consumption
- ✓ Customize alert settings
- ✓ Spot and Stop leaks



HOME CONNECT – ONLINE WATER USE TRACKER

- ✓ Login/Create My Ventura Water Account
- ✓ Select HomeConnect
- ✓ View Account Info and link additional accounts
- ✓ **REPORTS**
 - ☐ Meter Usage Charts
- ✓ **NOTIFICATIONS**
 - ☐ Receive Threshold Notifications by e-mail
 - ☐ Opt in to receive Leak Detection Notifications



Green Button
Download My Data

NEW METER BENEFITS

- ✓ More Modernized Metering System
- ✓ Reduction of Water Loss
- ✓ Reduced Greenhouse Emissions
- ✓ Best Practice in the Utility Industry



PROJECT INFORMATION

www.venturawater.net



The screenshot shows the Ventura Water website's 'Smart Meters' page. The browser address bar displays 'https://www.cityofventura.ca.gov/1111/Smart-Meters'. The page features the Ventura Water logo, navigation links for BILLING, COMMUNITY, ABOUT YOUR WATER, and SERVICES, and a search bar. A diagram titled 'SMART WATER METER' illustrates the process: water is used at home or business, recorded by the smart meter and transmitted to Ventura Water, which then uses the information to generate the bill. A sidebar on the left lists 'Potable Reuse', 'Smart Meters', and 'State Water Interconnection'. The main content area includes a link to 'Create an account for Home Connect, the online water use tracker.' and a section titled 'Smart Meters' explaining that they are also known as Advanced Metering Infrastructure (AMI) and provide meter data for billing and sharing through an online portal. At the bottom, a row of buttons provides links to 'Project Benefits', 'How it Works', 'What to Expect', 'Installation Map', 'About the Contractor', 'Security', 'FAQ's', and 'More Info'.

Smart Meters | Ventura, CA

Secure | <https://www.cityofventura.ca.gov/1111/Smart-Meters>

Create an Account - Increase your productivity, customize your experience, and engage in information you care about. Sign In

VENTURA WATER

BILLING COMMUNITY ABOUT YOUR WATER SERVICES

SMART WATER METER

Access water reports on-line
Early usage
Leak detection
Email notifications

Water is used at your home or business

Water usage is recorded by the smart meter and transmitted to Ventura Water

Ventura Water uses the information to generate your bill

[Create an account](#) for Home Connect, the online water use tracker.

Home » Government » Departments » Ventura Water » Services » Capital Improvement Projects » Smart Meters

Smart Meters

Also known as Advanced Metering Infrastructure (AMI)

Smart Meters provide meter data between your meter and Ventura Water, that data is then used for billing and shared back to you through an online portal (Home Connect). The new smart meter system will replace your current water meter.

Project Benefits How it Works What to Expect Installation Map About the Contractor Security FAQ's More Info



**DOING
OUR PART
TO SAVE
WATER**



[Sign-Up Today!](#)



Pipeline Newsletter

Follow Ventura Water on





AMI Benefits Matrix

CONSUMERS

1. Cost Savings Resulting from efficient water use.
2. Increased consumer choice and control through a web portal.
3. More transparent information and control for consumers
4. Ever ask why your water bill is so high? Hourly data available for customers to identify water wasting activities or leaks!
5. Monthly billing instead of bi-monthly.

ENVIRONMENT

1. Reduced need for meter reader to drive around town burning fossil fuels.
2. Reduced carbon footprint and other pollutants.
3. Conservation of water resources through better control of water by the customer and Ventura Water. (as of 2/21/2017 Ventura is still in a Severe drought) .

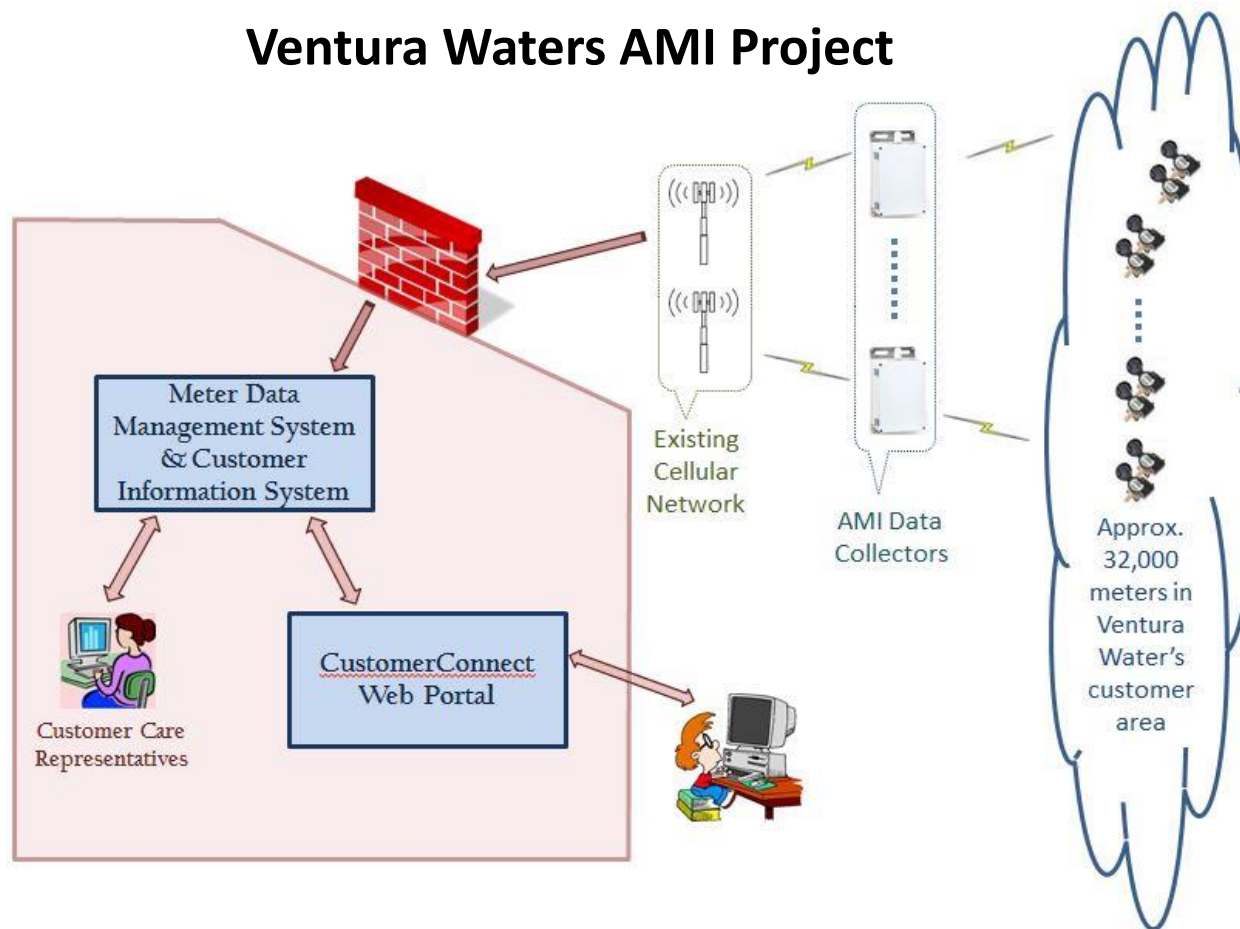
VENTURA WATER

1. Reduced Cost Due to increased efficiencies in delivering water and reduction in manpower to read meters.
2. Improved reliability with leak detection anti tampering.
3. Increased customer satisfaction due to cost savings and self-control
4. Accurate meter readings - most meters in Ventura are already at or beyond their life and likely not to be reading accurately

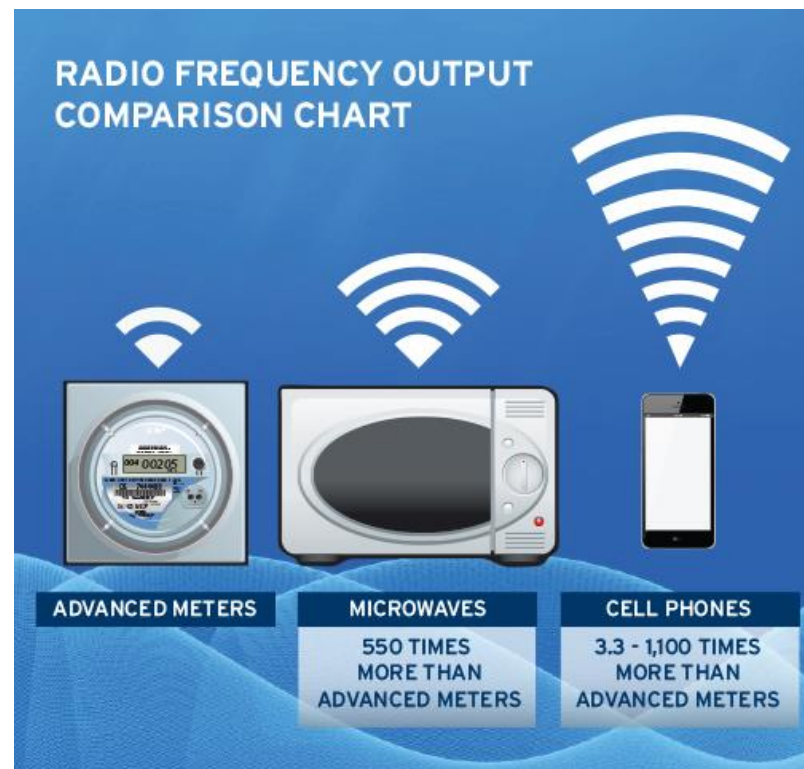
ECONOMY

1. Creates new market for goods and services (i.e., technical and engineering)
2. Up-skilling workforce to be prepared for new jobs
3. Less wasted water with faster identification of leaks and/or tampering.
4. Proficiency in meter reading - long term savings for customers.
5. Reduced worker compensation claims

Ventura Waters AMI Project



Health Concerns of AMI





Security

- AMI Meter RF transmissions only contain the Reading, error codes, and Meter ID.
- AMI Meter RF transmission utilizes technology making interception impossible.
- Ventura Water customer's personal information never leaves the safety of the servers

Privacy

The City of Ventura and Ventura Water takes data security very seriously. Ventura's Policy for protection Personal Identifying Information.



- Personal Identifying Information is protected by the California Public Records Act.
- Personal Identifying Information is ***not present*** outside of the servers either at the AMI meters or the AMI Data Collectors.
- The city of Ventura has two relevant policies on protection of Personal Identifying Information located inside the city's firewalls (on the city's servers):
 - City Administrative Policy and Procedure No. 20.4 – Information Technology Security Policy
 - Customer Identity Theft Prevention Program - Resolution and Administrative Report No. 2009-017.
- The data collected by the AMI system will not be used for water use enforcement.

For example: if data indicates that a customer may be watering their lawn during prohibited hours in the middle of the day, it is not enough to warrant enforcement action. Other evidence such as pictures or complaints from neighbors will still be required.

Background Leakage Un-Reported Leakage Reported Leakage




Threshold Notifications:

 CSV	 PDF
+ Add Threshold	
No results found	

Event Notifications:


≡ All Articles



Save Water and Money

Ventura Water offers Free Smart Irrigation Controllers and High Efficiency Sprinkler Nozzles.

Category: **Conservation,Rebate**



In-Home Water Survey

Are you concerned about high water bills? Would you like to use less water? We can help you use water more efficiently indoors and outdoors.

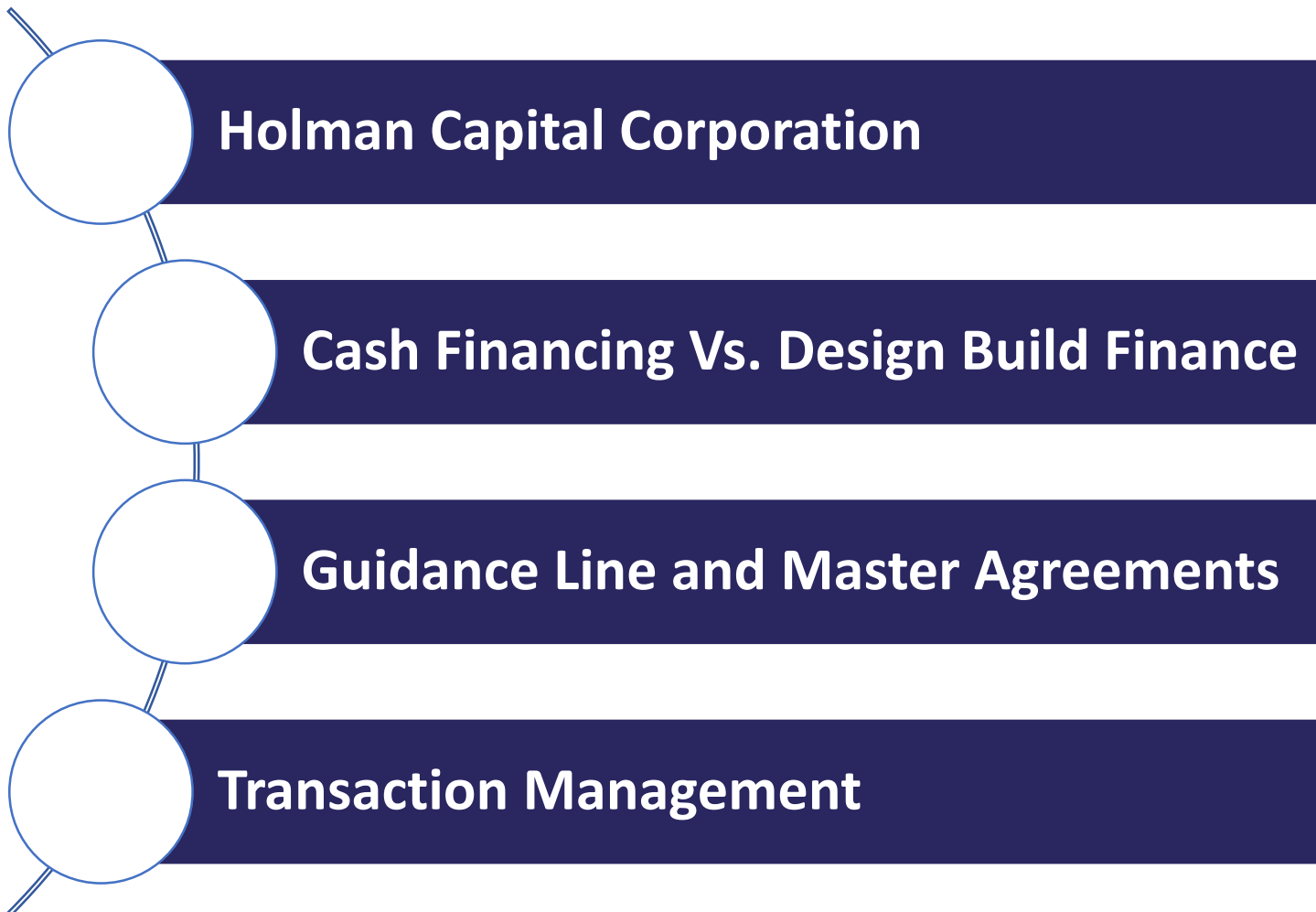
Category: **Community,Conservation,Help**



2020 ANNUAL CSMFO CONFERENCE

PUBLIC SECTOR LENDING

Investing In America





Direct Lending



Private Equity

Solve Complex Issues

- Identify Critical Issues Facing America
- Development Solutions to Improve the Quality in America

Capital & Ideas

- Provide Capital and Ideas to Governments, Educational Institutions and Health Systems

Assets

Solar

Energy
Conservation

Equipment

Infrastructure

Real Property



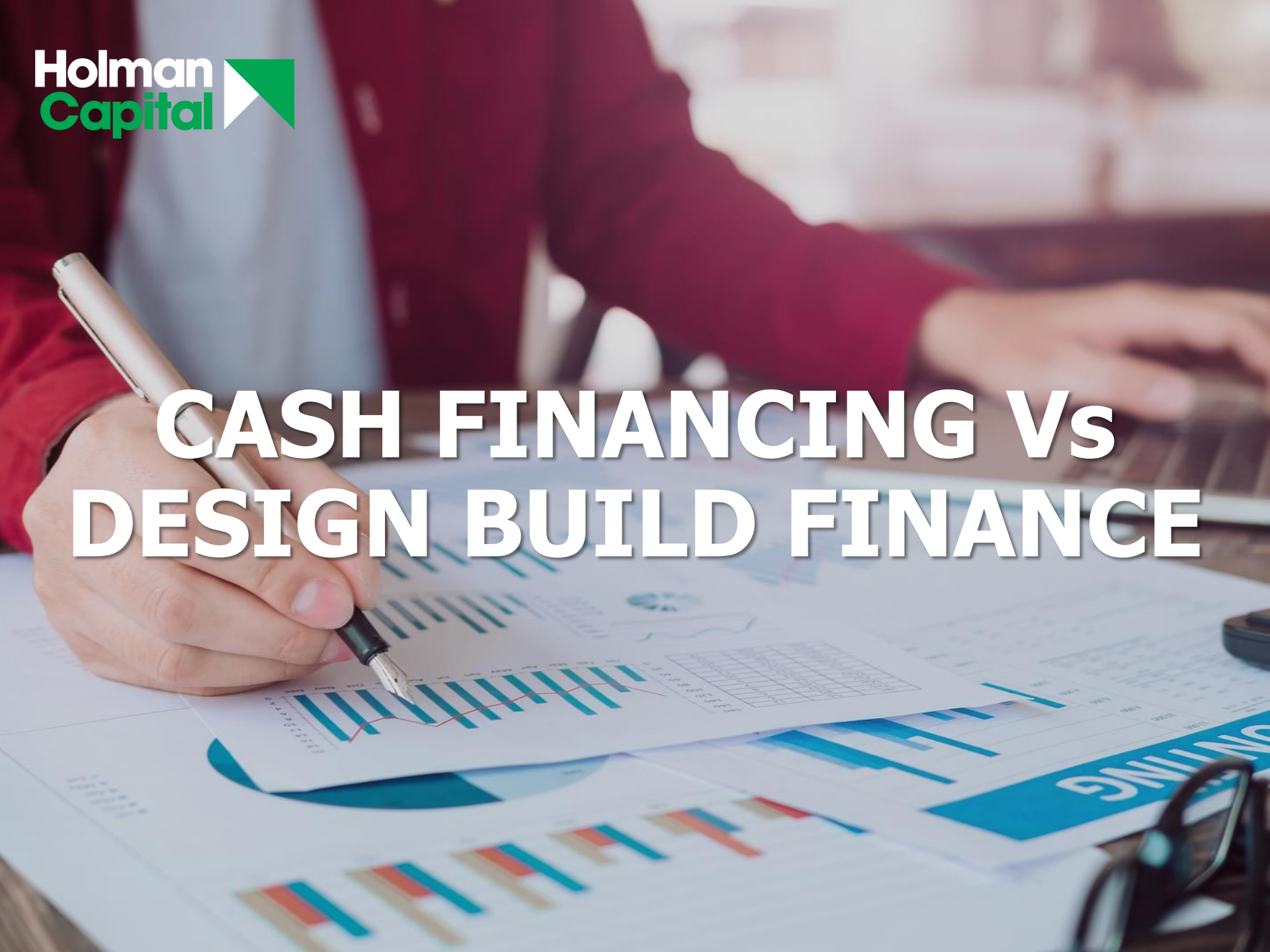
Public Bond

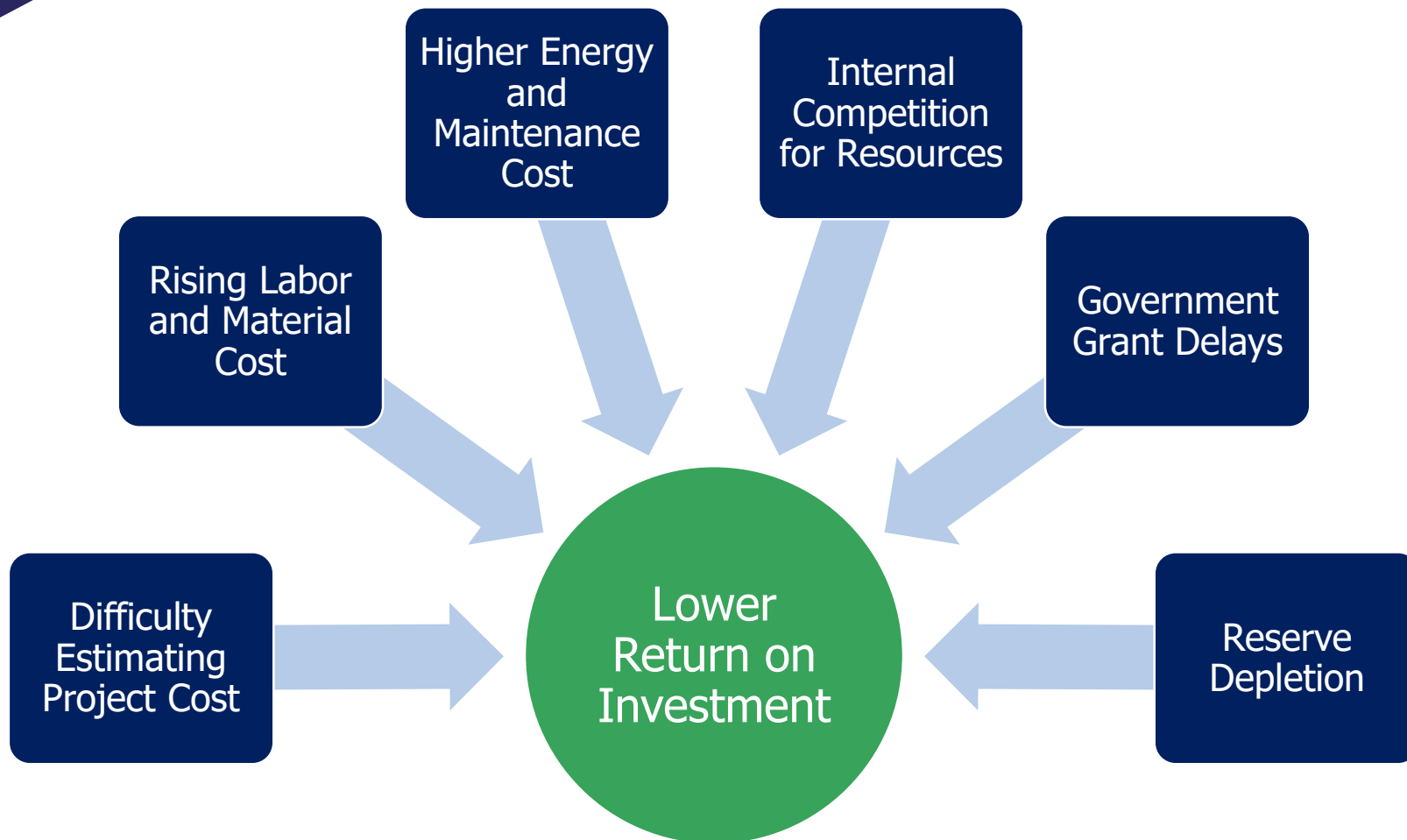
- Multiple Investors
- May Require Voter Approval
- Larger Financings
- Less Payment Flexibility
- Higher Transactional Fees
- Lower Rates
- Financing Terms up to 30 Years
- Transaction Priced on Sale Date
- Longer Funding Cycle

Direct Lending

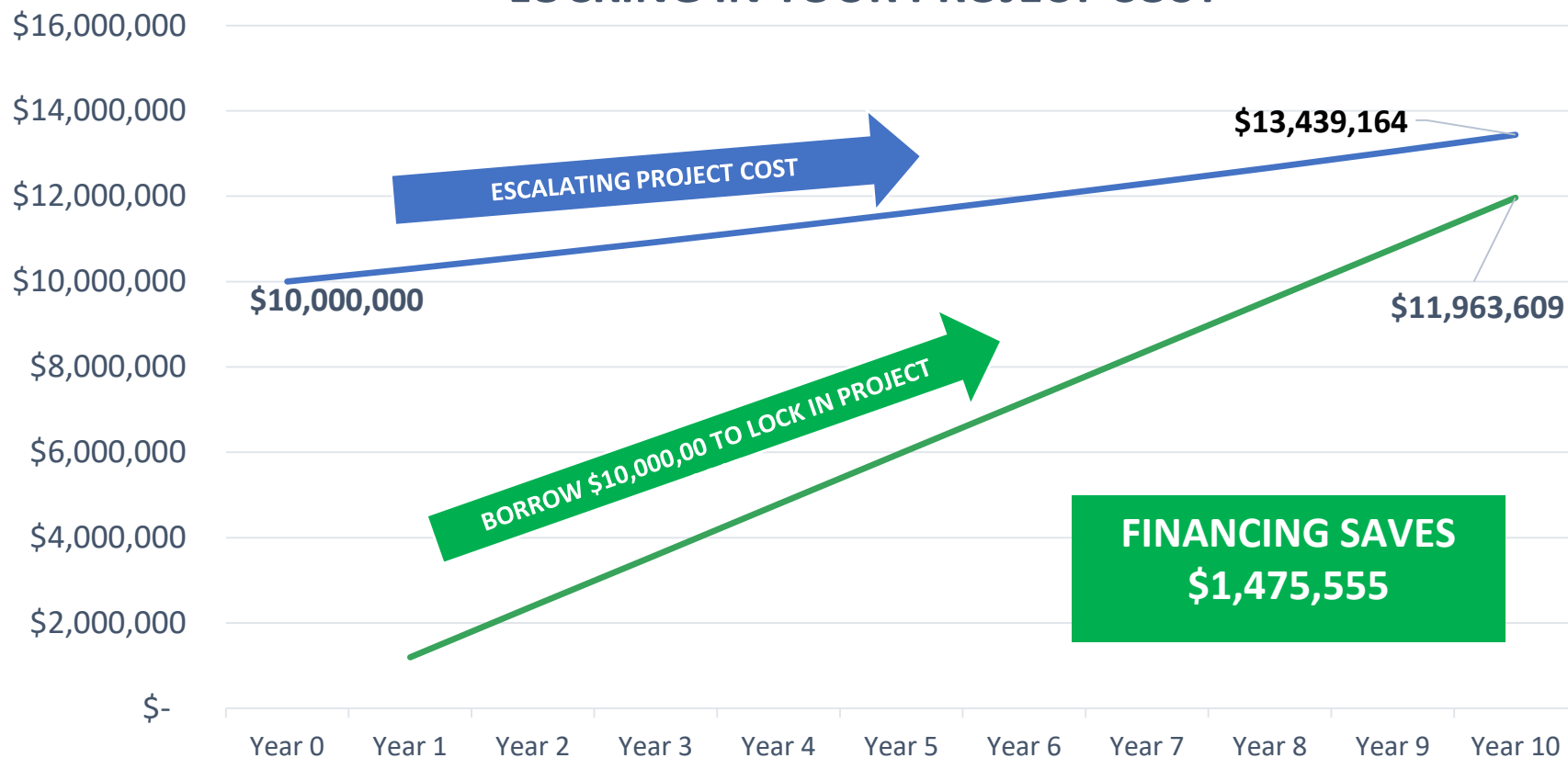
- Single Investor
- No Voter Approval
- Small and Medium Financings
- Payment Flexibility
- Minimal Transaction Fees
- Competitive Rates
- Financing Terms up to 30 Years
- Rate Locks
- Quick Funding

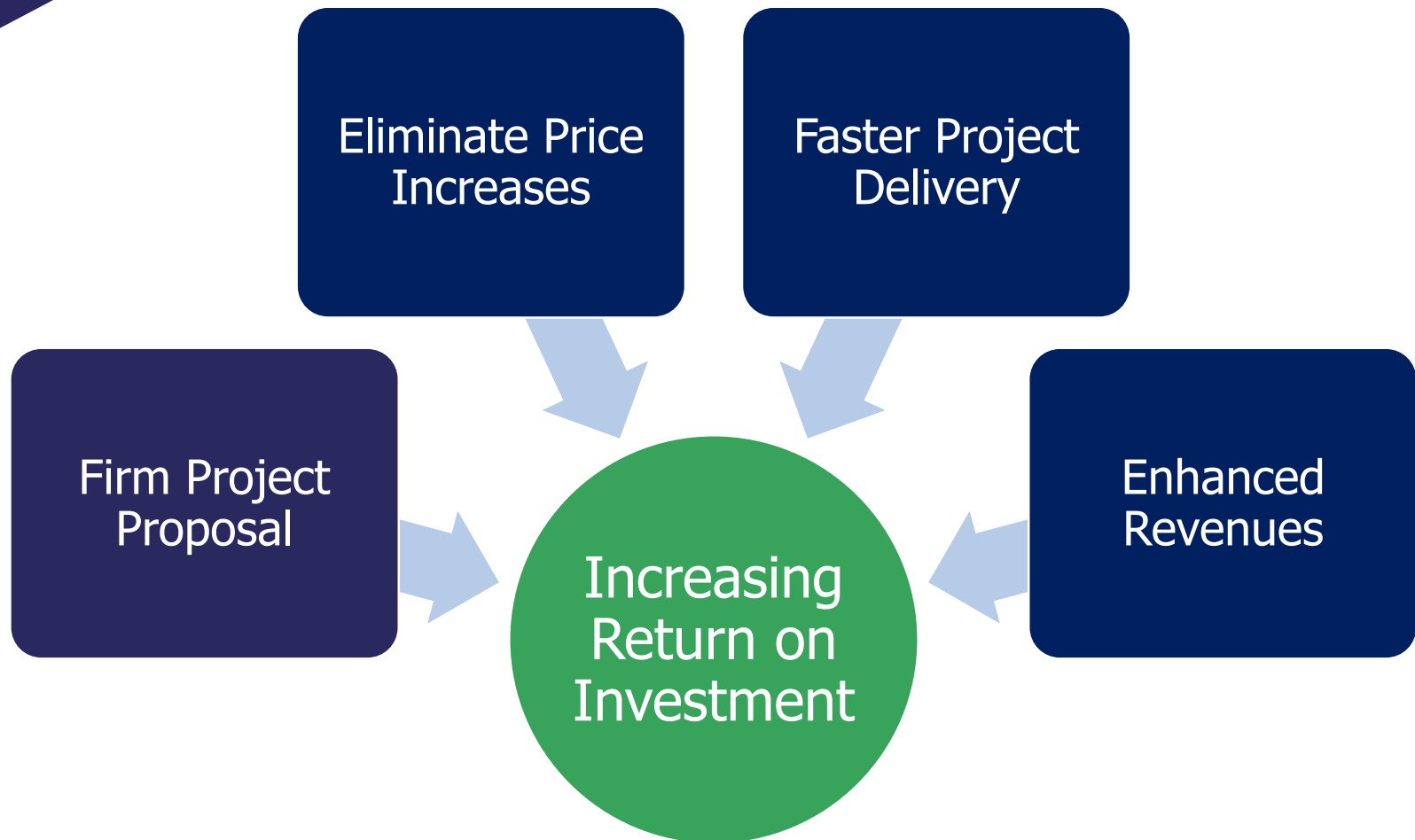
CASH FINANCING Vs DESIGN BUILD FINANCE





LOCKING IN YOUR PROJECT COST







Guidance Line of Credit & Master Financing Agreements

Simplifying Your Capital Project Financings



MASTER LEASE PURCHASE AGREEMENT

- General Fund Obligation
- Secured by the Collateral

MASTER INSTALLMENT PURCHASE AGREEMENT

- Enterprise Fund Obligation
- Debt Service Coverage Ratio

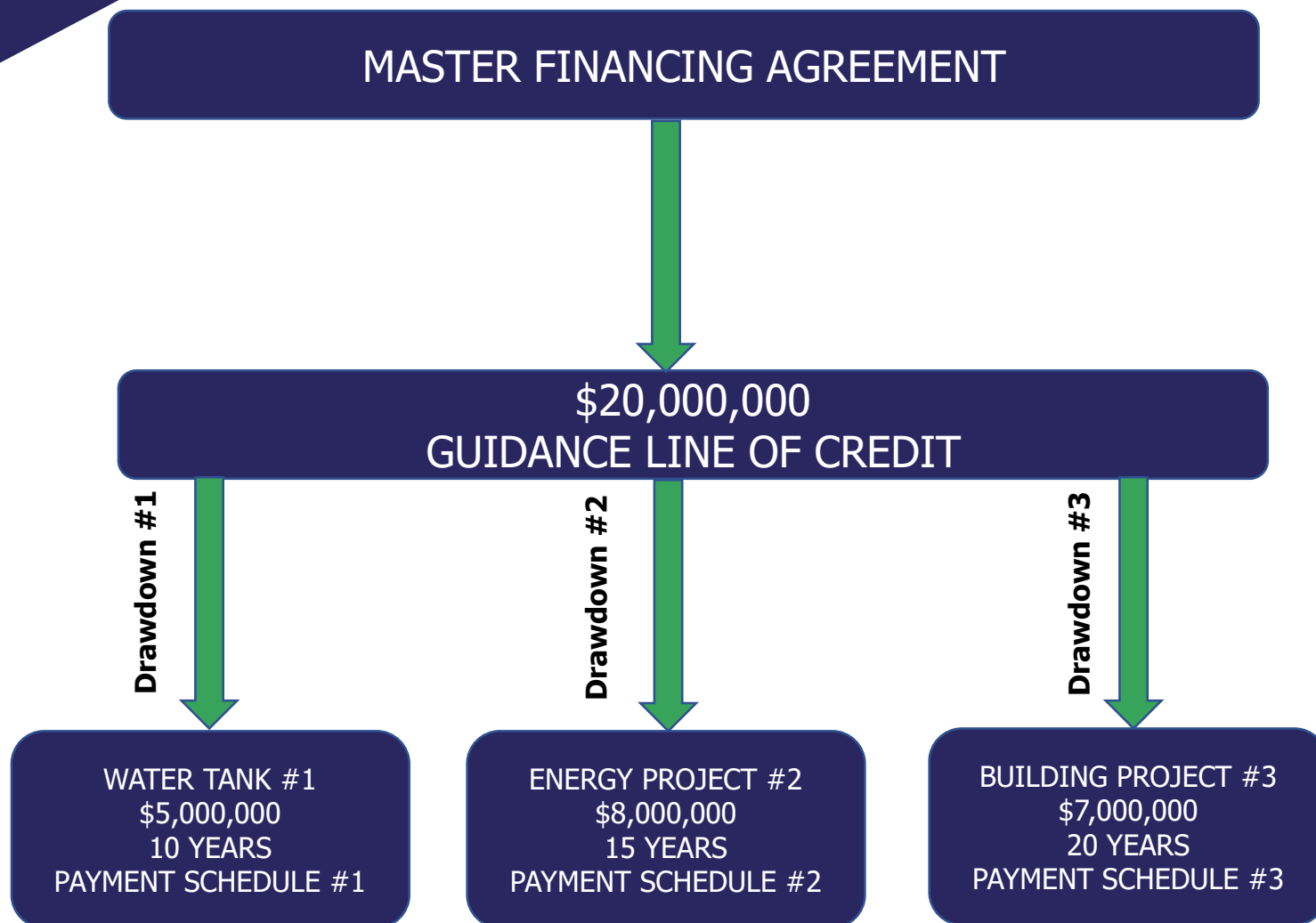
Terms and Conditions

- Collateral/Security Interest
- Maintenance
- Insurance
- Default Provisions

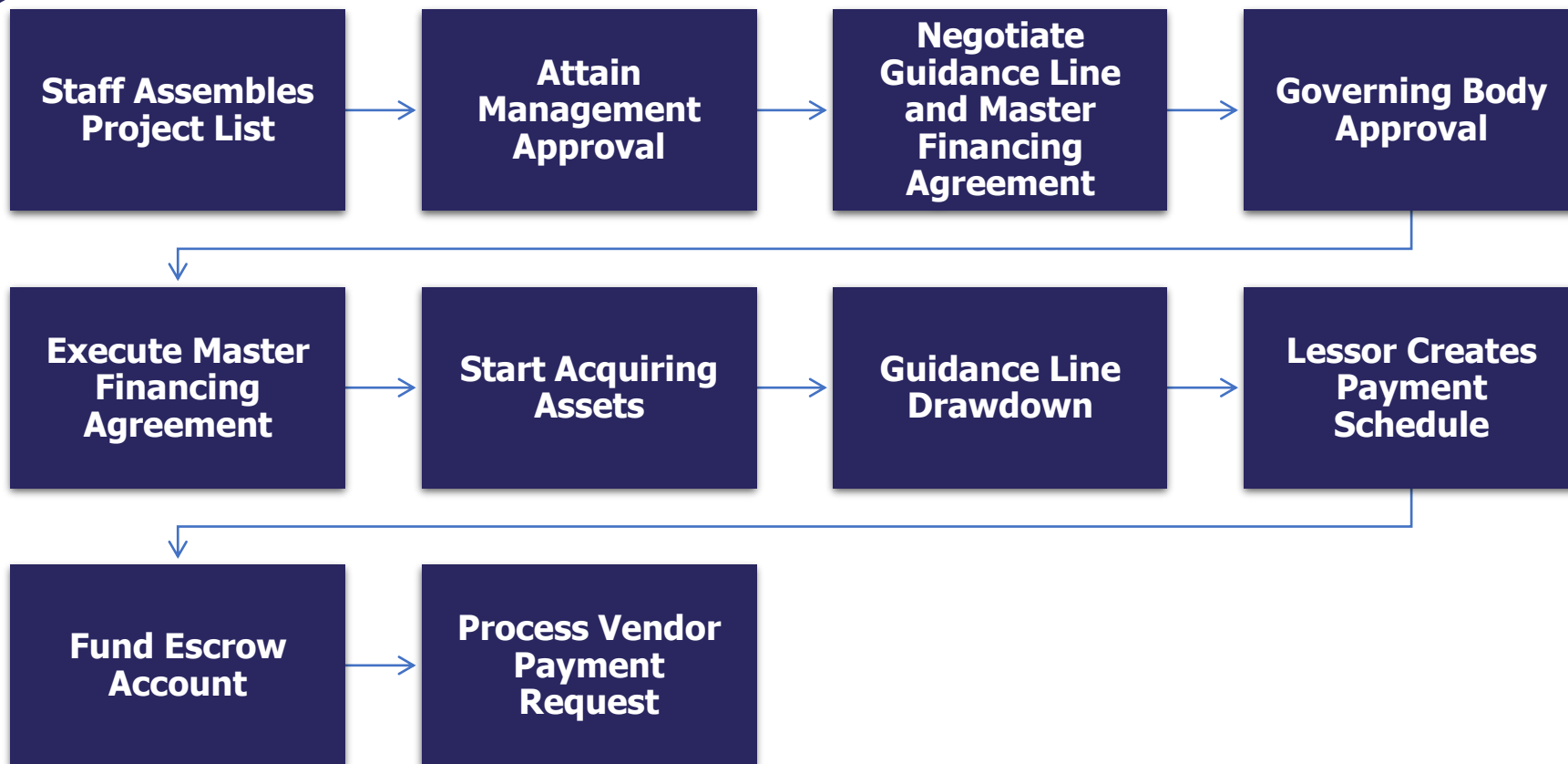
Facilitate Multiple Separate Transactions

- Separate Payment Schedules
- Financing Amount
- Interest Rate
- Term

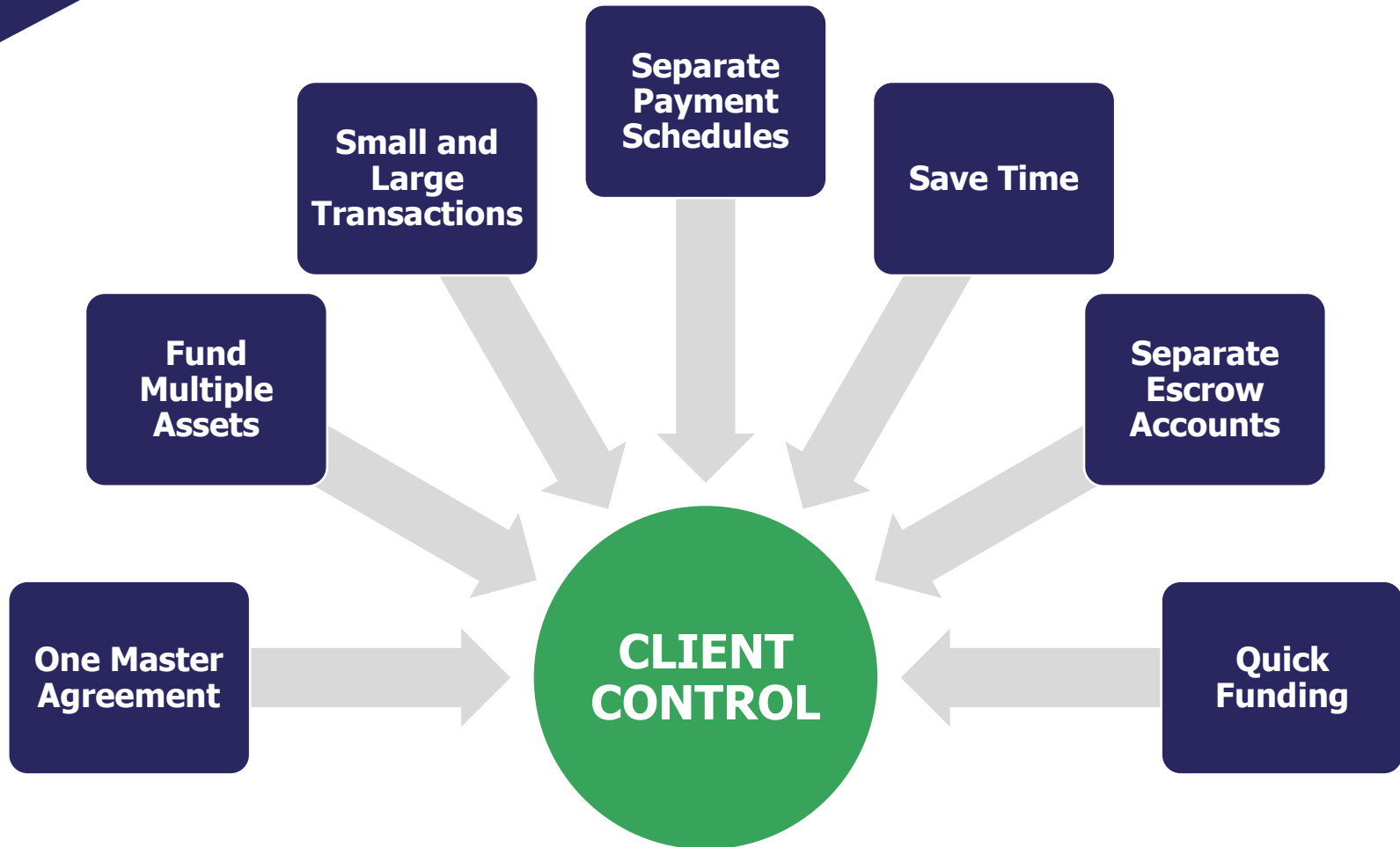
MASTER FINANCING AGREEMENT

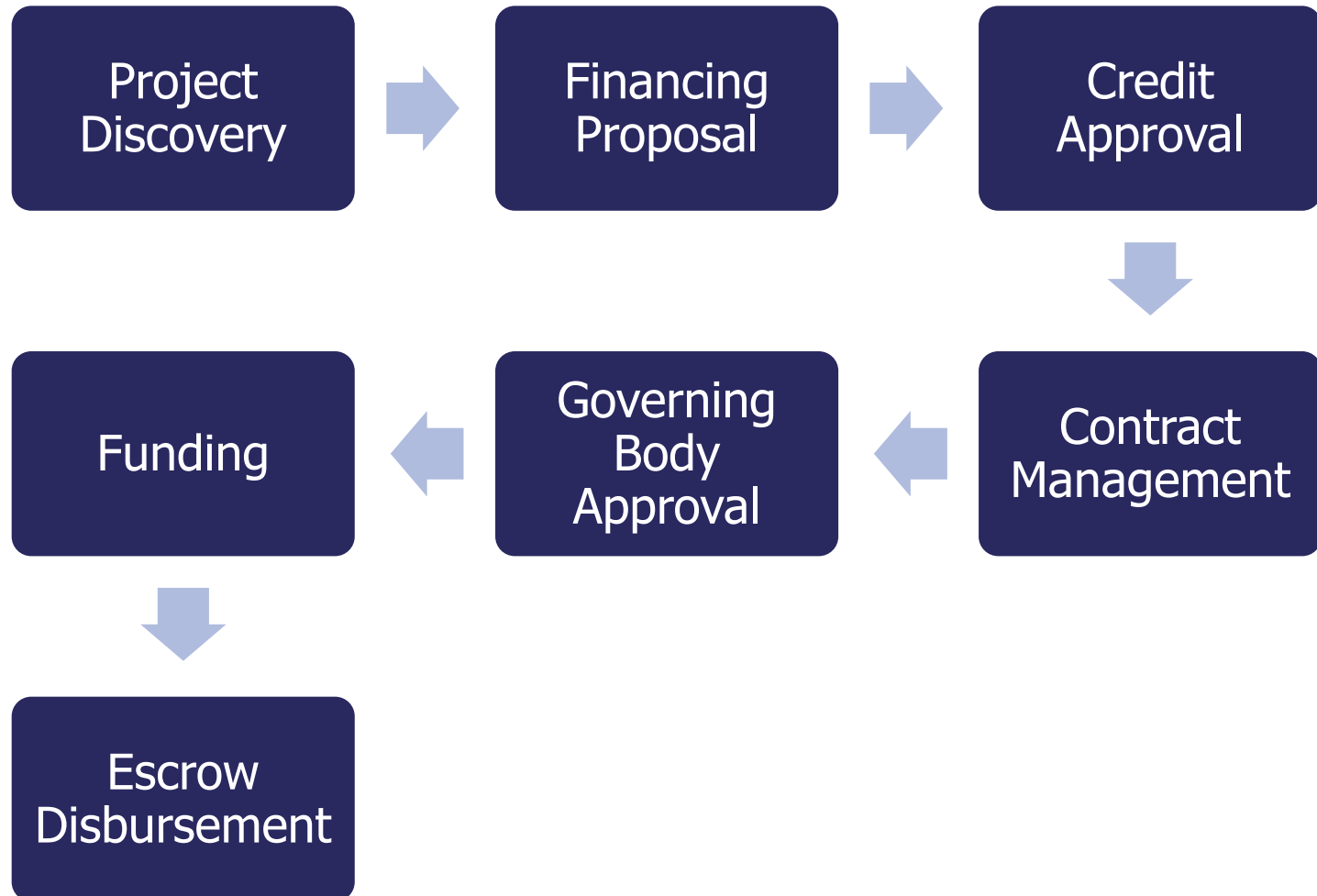


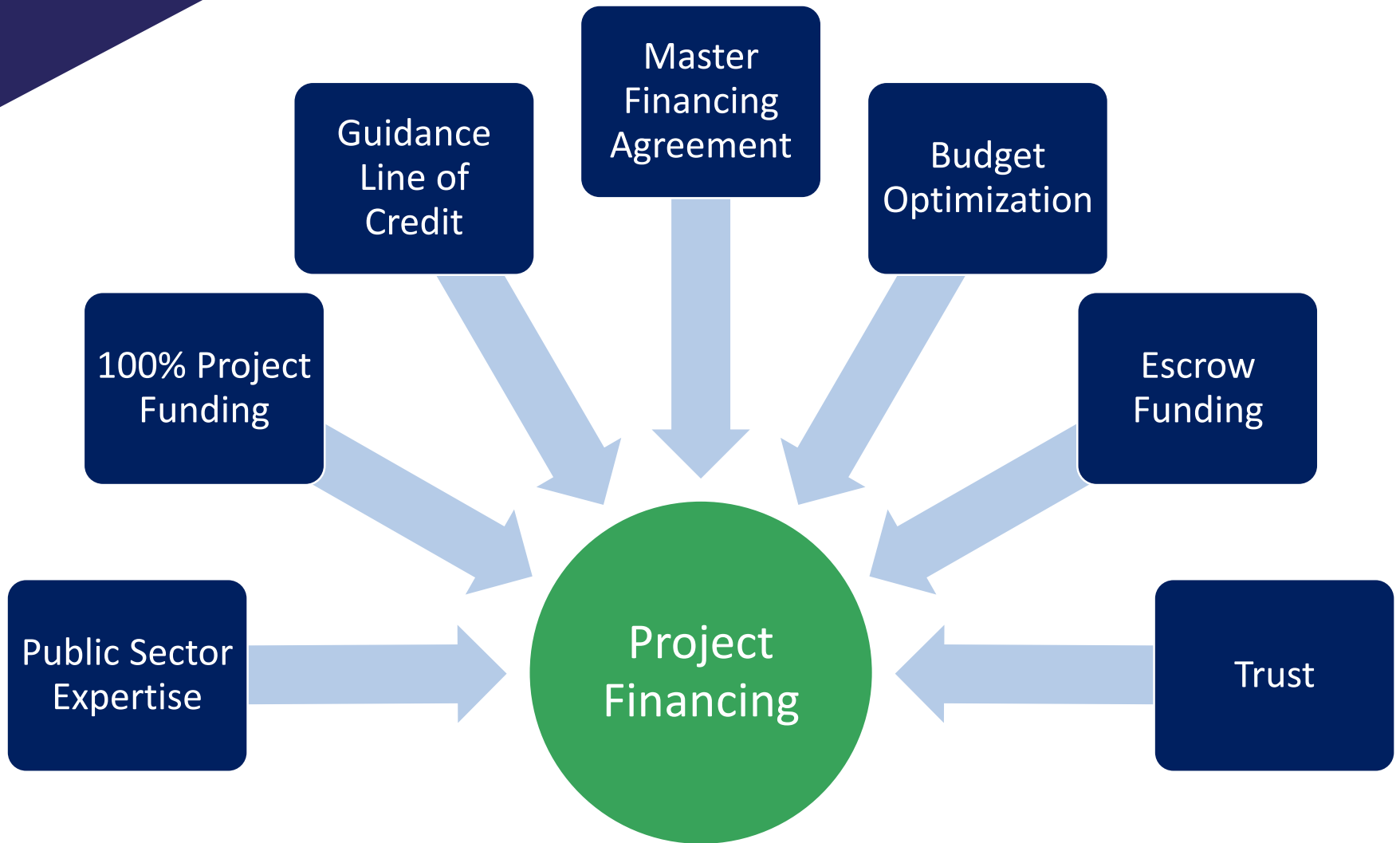
DECISION FLOW CHART

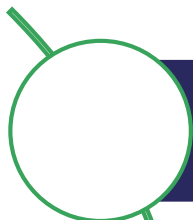


WHY MASTER FINANCING AGREEMENTS

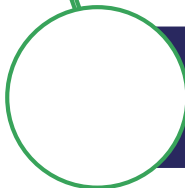




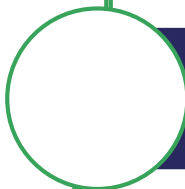




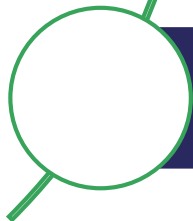
Webinars



White Papers



Products Sheets



One-on-One Consultation

QUESTIONS & ANSWERS





Lance Holman
President & CEO

949-981-0237

Lance.Holman@HolmanCapital.com