



Funding of TMRS Benefits

Presented by

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Addison Benefits

- 7% Employee Contribution
- 2 to 1 match from city
- 5 year vesting – survivor benefits
- Retirement at 20 years of service or age 60 with 5 years service
- Restricted Prior Service Credit
- Buy Back – Adopted November 1988
- Military Service Credit
- Supplemental Death Benefit – Actives and Retirees
- Updated Service Credits – 100% w/ Transfer, Annually Repeating
- COLA – 70% CPI, ad hoc last adopted effective 2015

Metroplex TMRS Cities Comparison

City	7% Emp Cont	2:1 City match	5-yr vesting	Ret 20 yr / age 60	Restr. Prior Svc Cr	Mil. Svc Cr	Supple. Death Benefit	Updated Svc Cr (repeating unless noted)	COLA Ann. Repeat	COLA Ad hoc
Addison	X	X	X	X	X	X	X	100% T		70% - 2015
Allen	X	X	X	X	X	X	X	100% T	70% CPI	
Carrollton	X	X	X	X	X	X		100% T	50% CPI	
Coppell	X	X	X	X	X	X	X	100% T	70% CPI	
Farmers Branch	X	X	X	25-yr		X		100% T	70% CPI	
Flower Mound	X	X	X	X	X	X	X	100% T		70% - 2007
Frisco	X	X	X	X	X	X	X	100% T	70% CPI	
Grapevine	X	X	X	X	X	X		100% T	70% CPI	
Irving	X	X	X	X	X	X	X	100% T	30% CPI	
Lewisville	X	X	X	X	X	X		75% T	70% CPI	
McKinney	X	X	X	X	X		X	100% T	70% CPI	
Plano	X	X	X	X	X	X		100% T	70% CPI	
Richardson	X	X	X	25-yr	X	X		50% T	50% CPI	
University Park	X	X	X	X	X			Ad hoc 2013		70% - 2013

TMRS Funding Basics

- Each TMRS city is independently funded, with its own assets and liabilities.
- The contribution rate for each TMRS city is set annually by an actuarial valuation performed as of December 31 of the preceding year. For example, the 2017 rate was set in May 2016 based on a valuation performed as of December 31, 2015.

Addison's Unfunded Actuarial Liability

- Unfunded Actuarial Liability -\$4,542,059
- Funded Ratio – 96.1%

Recent Actuarial Changes / Board Decisions

The TMRS Board has made a number of actuarial changes to improve the System's sustainability:

- Adopted new "Generational" mortality tables (2013)
- Approved a change in the actuarial cost method from "Projected Unit Credit" to "Entry Age Normal" (2013)
- Lowered the actuarial assumed rate of return from 7% to 6.75% (2015)

TMRS' Actuarial Funding Policy

The City's employer contribution determined annually under this funding policy is called the Actuarially Determined Employer Contribution (ADEC) and serves as the basis for determining the Full Retirement Rate contribution under TMRS.

TMRS' Actuarial Funding Policy

The ADEC, which consists of a normal cost contribution rate and a prior service cost contribution rate, is determined by the following three key components:

1. Actuarial Cost Method
2. Asset Smoothing Method
3. Amortization Policy

Actuarial Cost Method

- Allocates the total present value of future benefits over an employee's working career
- TMRS uses the Entry Age Normal (EAN) actuarial cost method

Actuarial Smoothing Method

- Recognizes gains or losses in pension assets over some period of time so as to reduce the effects of market volatility and stabilize contributions
- Actuarial Value of Assets (AVA) is based on the Market Value of Assets (MVA) with ten-year smoothing applied

Interest Crediting Rate

- The interest crediting rate to cities for 2015 was set at the March 23-24 meeting of the TMRS Board based on the investment earnings for 2015.
- Recent Benefit Accumulation Fund interest credits to cities:

Val. Year	Market Return	Actuarial Return*	Retirement Rate (no SDB)
2011	2.37%	7.15%	10.53%
2012	9.95%	7.43%	10.22%
2013	9.70%	7.66%	10.16%
2014	5.68%	7.45%	9.33%
2015	0.06%	6.69%	10.27%

* Assumption was 7%; beginning in 2016, assumption is 6.75%

Amortization Policy

- The length of time and the structure selected for increasing or decreasing contributions to systematically eliminate any Unfunded Actuarial Accrued Liability or surplus
- The TMRS Act allows for open or closed amortization periods up to a maximum of 25 years
 - Addison has a closed amortization period
- Board rules allow additional flexibility, up to 30 years, for amortization periods

Ad Hoc COLAs and Updated Service Credit (USC)

- TMRS recommends that cities that intend to grant COLAs or USC on a regular basis adopt these as annually repeating benefits.
- All ad hoc benefits for TMRS cities are funded over a 15-year closed period.
- Cities with a consistent pattern of adopting ad hoc benefits will likely see contribution rates steadily increase (and funded ratios decrease) over time.
- Ad hoc benefits that are regularly adopted (1 out of last 2 years, **AND** 2 out of last 5 years) will be valued for GASB 68 financial reporting purposes as though they are annually repeating benefits.

Actuarial Experience Study

- An Experience Study is a review of the assumptions and methods used by the actuary
 - TMRS has one prepared every four years
 - Five-year interval considered reasonable
 - GFOA recommends at least once every five years
- This report tries to answer these questions for each assumption
 - What was TMRS' actual experience?
 - How does that compare with current assumptions?
 - Is a change warranted?

Experience Study

- Assumptions are updated to reflect economic conditions, member behavior, retirement/termination/salary patterns, and mortality.
- Based on results of the study, the Actuary recommends revised assumptions to the TMRS Board of Trustees, and the Board considers the Actuary's recommendation and makes the final decision for the System.
- The assumption set selected should be reasonable overall.
- Keeping assumptions up-to-date will help manage volatility of the contribution rates for TMRS cities.

The Investment Return Assumption

- The actual asset allocation of the trust fund will significantly affect the overall performance. This means:
 - The Investment Return Assumption cannot be based on a different allocation
 - How you are invested drives the long-term expected rate of return

The Investment Return Assumption

- Actuaries use a “building block” approach
Long Term Annual Investment Return Rate =
Inflation Rate + Annual Real Rate of Return
- TMRS’ long-term rate of return assumption was
7.00%
3.00% Inflation + 4.00% Real Return
- As of 12/31/15, the return assumption changed to
6.75%
2.50% inflation + 4.25% Real Return

Inflation

- Inflation is measured by annual increases in the Consumer Price Index (CPI).
- Prior to the experience study, TMRS' inflation assumption was 3.00% per year; changed to 2.50%.
- Actual inflation (measured by the CPI) during
 - Last 5 years: 1.69%
 - Last 20 years: 2.28%
 - Last 30 years: 2.71%
 - Since 1913:* 3.17%

* First available year

Real Return Expectations

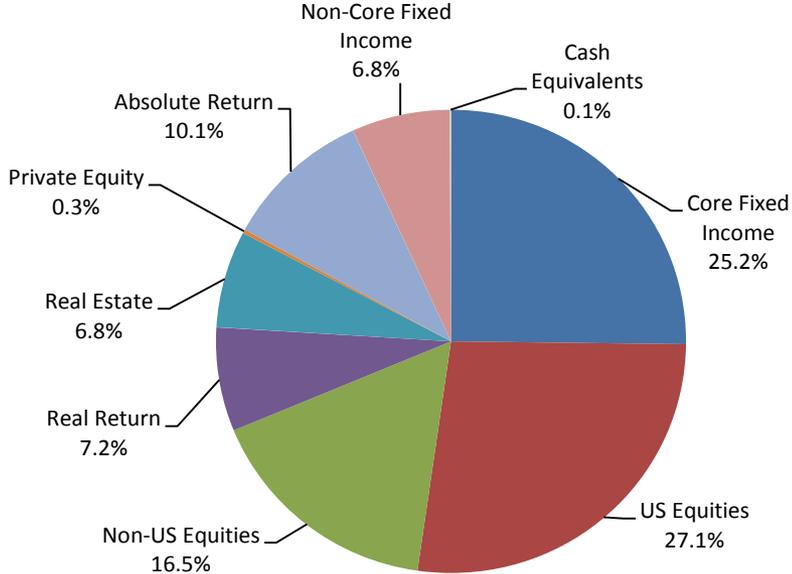
To analyze the expected real return, the Actuary:

- Combines TMRS' target asset allocation with capital market expectations.
- Examines the most recent capital market return assumptions developed by eight investment consulting firms.
 - See pages 14-19 of Actuarial Experience Study, posted on TMRS' website
 - Places emphasis on information from TMRS' Investment consultant, RVK
 - Mostly 5-10 year time horizons
- Adjusts the results for a difference in time horizon.
 - Duration of the Plan liabilities is over 20 years

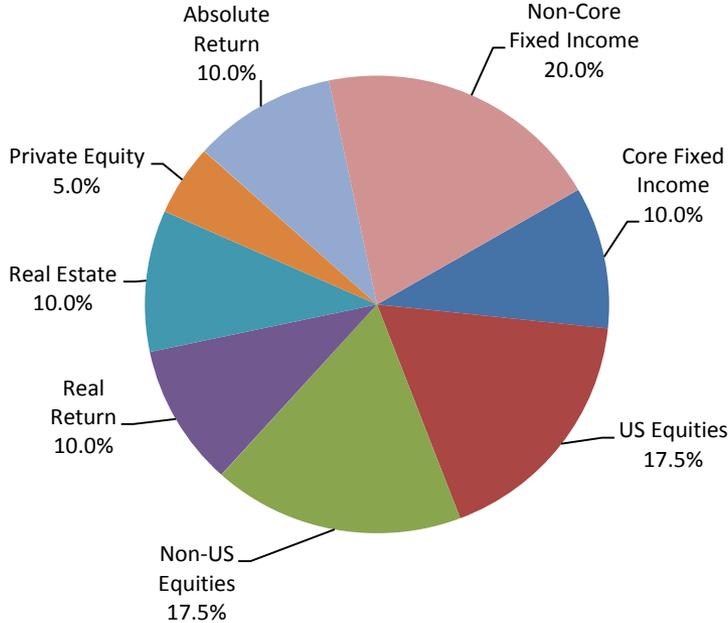
TMRS Asset Allocation

**Total Market Value:
\$24.3 Billion**

**Allocation as of
6/30/2016**



**Target Allocation
Adopted July 2015**



Cash equivalents allocation represents unallocated invested cash equivalent instruments. The sum of individual asset class allocations may not add up to 100% due to rounding. Source: State Street Investment Analytics

Addison Plan Change Study



Plan Change Study

00007 Addison

GRID 2017

For Informational Purposes Only

Effective Date - January 1, 2017

Report Date - November 4, 2016

Plan Provisions	Proposed Plans				
	Current	1	2	3	4
Deposit Rate	7.00%	7.00%	7.00%	7.00%	7.00%
Matching Ratio	2 to 1				
Updated Service Credit	100% (Repeating)				
Transfer USC **	Yes	Yes	Yes	Yes	Yes
Annuity Increase	0%	70%	70% (Repeating)	50% (Repeating)	30% (Repeating)
20 Year/Any Age Ret.	Yes	Yes	Yes	Yes	Yes
Vesting	5 years				
Contribution Rates	2017	2017	2017	2017	2017
Normal Cost Rate	8.14%	8.14%	10.56%	9.86%	9.17%
Prior Service Rate	2.13%	2.43%	8.65%	6.59%	4.52%
Retirement Rate	10.27%	10.57%	19.21%	16.45%	13.69%
Supplemental Death Rate	0.17% (A & R)				
Total Rate	10.44%	10.74%	19.38%	16.62%	13.86%
Unfunded Actuarial Liability	\$4,542,059	\$5,074,634	\$24,569,751	\$18,243,491	\$11,892,432
Amortization Period	25 years				
Funded Ratio	96.1%	95.6%	81.9%	85.9%	90.4%
Phase-In Total Rate	10.00%	10.30%	18.94%	16.18%	13.42%
Stat Max	15.50%	15.50%	15.50%	15.50%	15.50%
Study Exceeds Stat Max	No	No	Yes	Yes	No

**This is the addition to the Initial Prior Service Rate for USC for transfers. There were 27 eligible transfer employees on the valuation date.

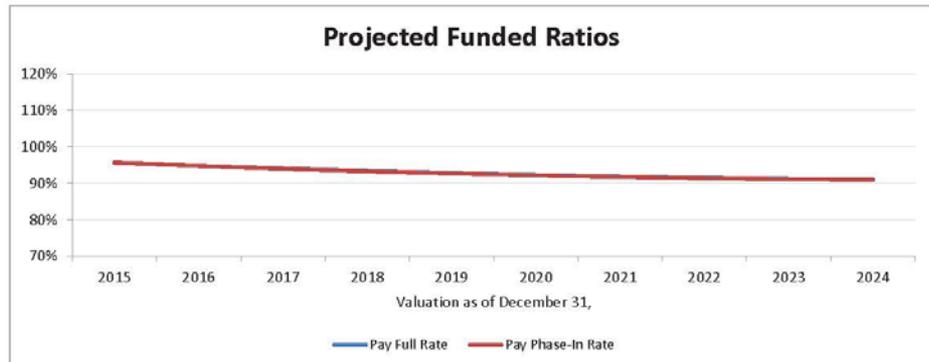
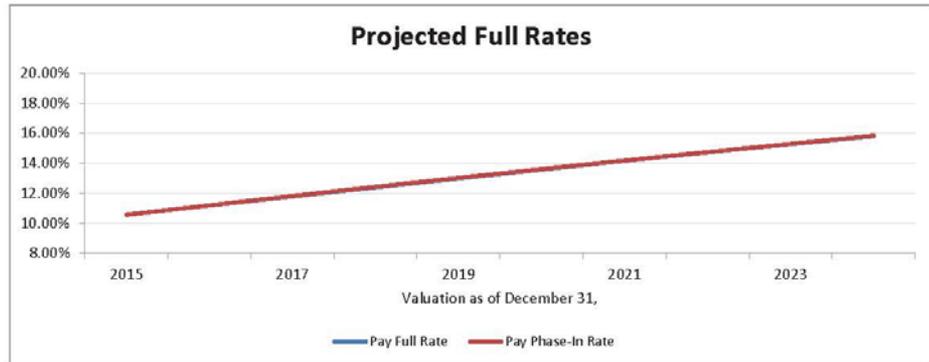
Projection of Valuation Results - Pension Only

7, Addison

Addison Projection Report – Proposed Plan 1 with Yearly Ad Hocs

Summary of Proposed Benefit Provisions			
Employee Contribution Rate	7.00%	USC	100% Recurring with Transfer
Employer Match Rate	2 - 1	COLA	Yearly 70% Ad Hocs
Vesting	5 years	Retirement Eligibility	Age 60 with 5 years of service or 20 years of service

Calendar Year	Projection Results							
	2016	2017	2018	2019	2020	2021	2022	2023
Full Rate	9.33%	10.57%	11.19%	11.79%	12.39%	12.99%	13.58%	14.15%
Estimated Contribution	1,759,431	2,053,066	2,238,696	2,429,495	2,629,728	2,839,788	3,057,833	3,281,766
Funded Ratio	95.6%	94.8%	94.0%	93.4%	92.8%	92.3%	91.9%	91.5%
If Phase In Rate Contributed								
Full Rate	9.33%	10.57%	11.19%	11.82%	12.42%	13.02%	13.61%	14.18%
Phase-In Rate	9.33%	10.13%	11.19%	11.82%	12.42%	13.02%	13.61%	14.18%
Estimated Contribution	1,759,431	1,967,602	2,238,696	2,435,677	2,636,095	2,846,346	3,064,588	3,288,724
Funded Ratio	95.6%	94.8%	94.0%	93.3%	92.7%	92.2%	91.8%	91.4%



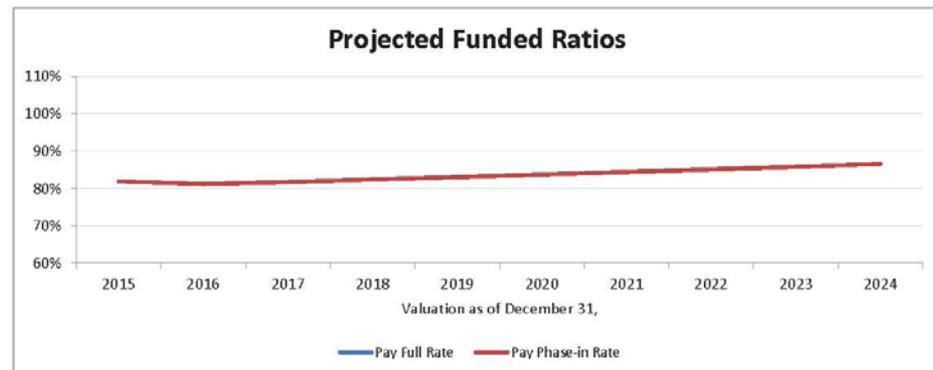
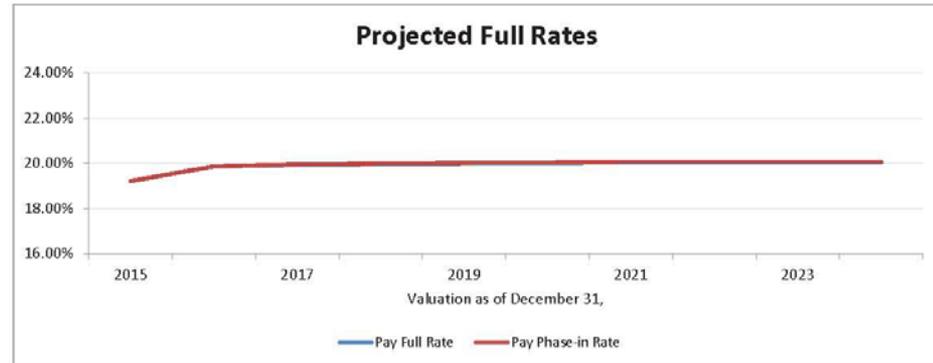
Addison Projection Report – Proposed Plan 2 with Annually Repeating

Projection of Valuation Results - Pension Only

7, Addison

Summary of Proposed Benefit Provisions			
Employee Contribution Rate	7.00%	USC	100% Recurring with Transfer
Employer Match Rate	2 - 1	COLA	70% Recurring
Vesting	5 years	Retirement Eligibility	Age 60 with 5 years of service or 20 years of service

Calendar Year	Projection Results							
	2016	2017	2018	2019	2020	2021	2022	2023
Full Rate	9.33%	19.21%	19.85%	19.93%	19.96%	19.99%	20.01%	20.03%
Estimated Contribution	1,759,431	3,731,257	3,971,235	4,106,857	4,236,430	4,370,081	4,505,687	4,645,496
Funded Ratio	81.9%	81.2%	81.8%	82.4%	83.1%	83.8%	84.5%	85.2%
If Phase In Rate Contributed								
Full Rate	9.33%	19.21%	19.85%	19.95%	19.99%	20.02%	20.04%	20.06%
Phase-In Rate	9.33%	18.77%	19.85%	19.95%	19.99%	20.02%	20.04%	20.06%
Estimated Contribution	1,759,431	3,645,794	3,971,235	4,110,978	4,242,797	4,376,640	4,512,442	4,652,454
Funded Ratio	81.9%	81.2%	81.7%	82.4%	83.1%	83.7%	84.4%	85.1%



Addison UAAL Runoff as of 12/31/2015

Description	2009 Ad Hoc	2010 Ad Hoc	2011 Ad Hoc	2012 Ad Hoc	2013 Ad Hoc	2013	2015
						Valuation/ 2014-2015 Experience	Actuarial Changes
Years Left	9	10	11	12	13	12	30
UAAL Base	326,635	221,360	570,670	401,667	388,689	269,354	2,363,684

<u>Payment Stream</u>								<u>Total Payment</u> <u>(sum B-H)</u>	<u>UAAL Balance</u>
1	48,000	30,147	72,730	48,287	44,369	28,014	130,365	401,912	4,542,059
2	48,000	30,147	72,730	48,287	44,369	28,854	134,276	406,663	4,433,319
3	48,000	30,147	72,730	48,287	44,369	29,720	138,304	411,557	4,312,329
4	48,000	30,147	72,730	48,287	44,369	30,612	142,453	416,598	4,178,115
5	48,000	30,147	72,730	48,287	44,369	31,530	146,727	421,790	4,029,633
6	48,000	30,147	72,730	48,287	44,369	32,476	151,129	427,138	3,865,763
7	48,000	30,147	72,730	48,287	44,369	33,450	155,663	432,646	3,685,305
8	48,000	30,147	72,730	48,287	44,369	34,454	160,333	438,319	3,486,975
9	48,000	30,147	72,730	48,287	44,369	35,487	165,142	444,163	3,269,394
10	-	30,147	72,730	48,287	44,369	36,552	170,097	402,182	3,031,088
11	-	-	72,730	48,287	44,369	37,648	175,200	378,234	2,820,079
12	-	-	-	48,287	44,369	38,778	180,456	311,890	2,619,574
13	-	-	-	-	44,369	-	185,869	230,238	2,474,094
14	-	-	-	-	-	-	191,445	191,445	2,403,171
15	-	-	-	-	-	-	197,189	197,189	2,367,548
16	-	-	-	-	-	-	203,104	203,104	2,323,586
17	-	-	-	-	-	-	209,198	209,198	2,270,544
18	-	-	-	-	-	-	215,473	215,473	2,207,625
19	-	-	-	-	-	-	221,938	221,938	2,133,973
20	-	-	-	-	-	-	228,596	228,596	2,048,669
21	-	-	-	-	-	-	235,454	235,454	1,950,728
22	-	-	-	-	-	-	242,517	242,517	1,839,088
23	-	-	-	-	-	-	249,793	249,793	1,712,613
24	-	-	-	-	-	-	257,287	257,287	1,570,083
25	-	-	-	-	-	-	265,005	265,005	1,410,188
26	-	-	-	-	-	-	272,955	272,955	1,231,524
27	-	-	-	-	-	-	281,144	281,144	1,032,585
28	-	-	-	-	-	-	289,578	289,578	811,755
29	-	-	-	-	-	-	298,266	298,266	567,303
30	-	-	-	-	-	-	307,214	307,214	297,373
31	-	-	-	-	-	-	-	-	-
Total Payment	432,000	301,470	800,030	579,444	576,797	397,576	6,202,169	9,289,486	

Addison UAAL Runoff as of 12/31/2015

Adopting 70% ad hoc COLA effective in 1/1/2017

Description	2009	2010	2011	2012	2013	2013 Valuation/ 2014-2015 Experience	2015 Actuarial Changes	2015 Ad Hoc
Years Left	Ad Hoc	Ad Hoc	Ad Hoc					
UAAL Base	326,635	221,360	570,670	401,667	388,689	269,354	2,363,684	532,575

<u>Payment Stream</u>									<u>Total Payment</u> (sum B:I)	<u>UAAL Balance</u>
1	48,000	30,147	72,730	48,287	44,369	28,014	130,365	55,695	457,607	5,074,634
2	48,000	30,147	72,730	48,287	44,369	28,854	134,276	55,695	462,358	4,944,289
3	48,000	30,147	72,730	48,287	44,369	29,720	138,304	55,695	467,252	4,800,235
4	48,000	30,147	72,730	48,287	44,369	30,612	142,453	55,695	472,293	4,641,401
5	48,000	30,147	72,730	48,287	44,369	31,530	146,727	55,695	477,485	4,466,636
6	48,000	30,147	72,730	48,287	44,369	32,476	151,129	55,695	482,833	4,274,709
7	48,000	30,147	72,730	48,287	44,369	33,450	155,663	55,695	488,341	4,064,301
8	48,000	30,147	72,730	48,287	44,369	34,454	160,333	55,695	494,014	3,833,998
9	48,000	30,147	72,730	48,287	44,369	35,487	165,142	55,695	499,858	3,582,288
10	-	30,147	72,730	48,287	44,369	36,552	170,097	55,695	457,877	3,307,548
11	-	-	72,730	48,287	44,369	37,648	175,200	55,695	433,929	3,057,645
12	-	-	-	48,287	44,369	38,778	180,456	55,695	367,585	2,815,622
13	-	-	-	-	44,369	-	185,869	55,695	285,933	2,625,821
14	-	-	-	-	-	-	191,445	55,695	247,140	2,507,585
15	-	-	-	-	-	-	197,189	55,695	252,884	2,421,456
16	-	-	-	-	-	-	203,104	-	203,104	2,323,579
17	-	-	-	-	-	-	209,198	-	209,198	2,270,536
18	-	-	-	-	-	-	215,473	-	215,473	2,207,616
19	-	-	-	-	-	-	221,938	-	221,938	2,133,964
20	-	-	-	-	-	-	228,596	-	228,596	2,048,660
21	-	-	-	-	-	-	235,454	-	235,454	1,950,717
22	-	-	-	-	-	-	242,517	-	242,517	1,839,077
23	-	-	-	-	-	-	249,793	-	249,793	1,712,601
24	-	-	-	-	-	-	257,287	-	257,287	1,570,070
25	-	-	-	-	-	-	265,005	-	265,005	1,410,175
26	-	-	-	-	-	-	272,955	-	272,955	1,231,510
27	-	-	-	-	-	-	281,144	-	281,144	1,032,569
28	-	-	-	-	-	-	289,578	-	289,578	811,738
29	-	-	-	-	-	-	298,266	-	298,266	567,285
30	-	-	-	-	-	-	307,214	-	307,214	297,354
31	-	-	-	-	-	-	-	-	-	-
Total Payment	432,000	301,470	800,030	579,444	576,797	397,576	6,202,169	835,425	10,124,911	

QUESTIONS?